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AIR PUBLICATION 1641B

Volume I

1st Edition, November 1938

23

VICKERS

•303 in. GAS OPERATED MK. I GUNS

No. 1 AIR SERVICE

AND NO 3

No. 2 GROUND SERVICE

AND NO 4

DESCRIPTIVE HANDBOOK

This descriptive handbook is published for the information
and guidance of all concerned.

By Command of the Air Council.

Donald Banks



AIR MINISTRY

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The amendments promulgated in the undermentioned amendment lists have been made in this publication.

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Number	Date		
1	JUNE 1939	LTC LOWE	28-4-41
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NOTE TO OFFICIAL USERS

Air Ministry Orders and Volume II leaflets as issued from time to time will affect the subject matter of this publication. It should be understood that amendment lists are not always issued to bring the publication into line with the orders or leaflets and it is for holders of this book to arrange the necessary linking-up.

Where an order or leaflet contradicts any portion of this publication, an amendment list will generally be issued but when this is not done the order or leaflet must be taken as the overriding authority.

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LEADING PARTICULARS

Length of gun overall with flash eliminator	3 ft. 4 in.
Length of barrel	1 ft. 8 in.
Weight of gun (approx.)	
(i) Mk. I, No. 1 gun	19½ lb.
(ii) Mk. I, No. 2 gun	20 lb.
Rifling	
(i) Type	Left hand
(ii) Twist	1 in 10 in.
(iii) Number of grooves	5
Ammunition used	All types of Mk. VII S.A.A.
Method of feed	Magazine
Capacity of magazine	(i) 60 rounds (ii) 100 rounds
Speed of fire (approx.)	
(i) Mk. I, No. 1 gun	950 rounds per min.
(ii) Mk. I, No. 2 gun	950 rounds per min.
Marks on the gun	950 ROUNDS PER MIN 700 ROUNDS PER MIN
(i) On the side of the breech casing	Nature, mark and number of the gun
(ii) On the barrel	Proof mark Calibre Year of manufacture (last two figures) Number of the barrel Number of the breech block
(iii) On the breech block	Viewers marks Broad arrow Makers trade mark
(iv) On various components	Separate store
Sights	
Mounting	
(i) Air service	Turret or free installations
(ii) Ground service	Tripod

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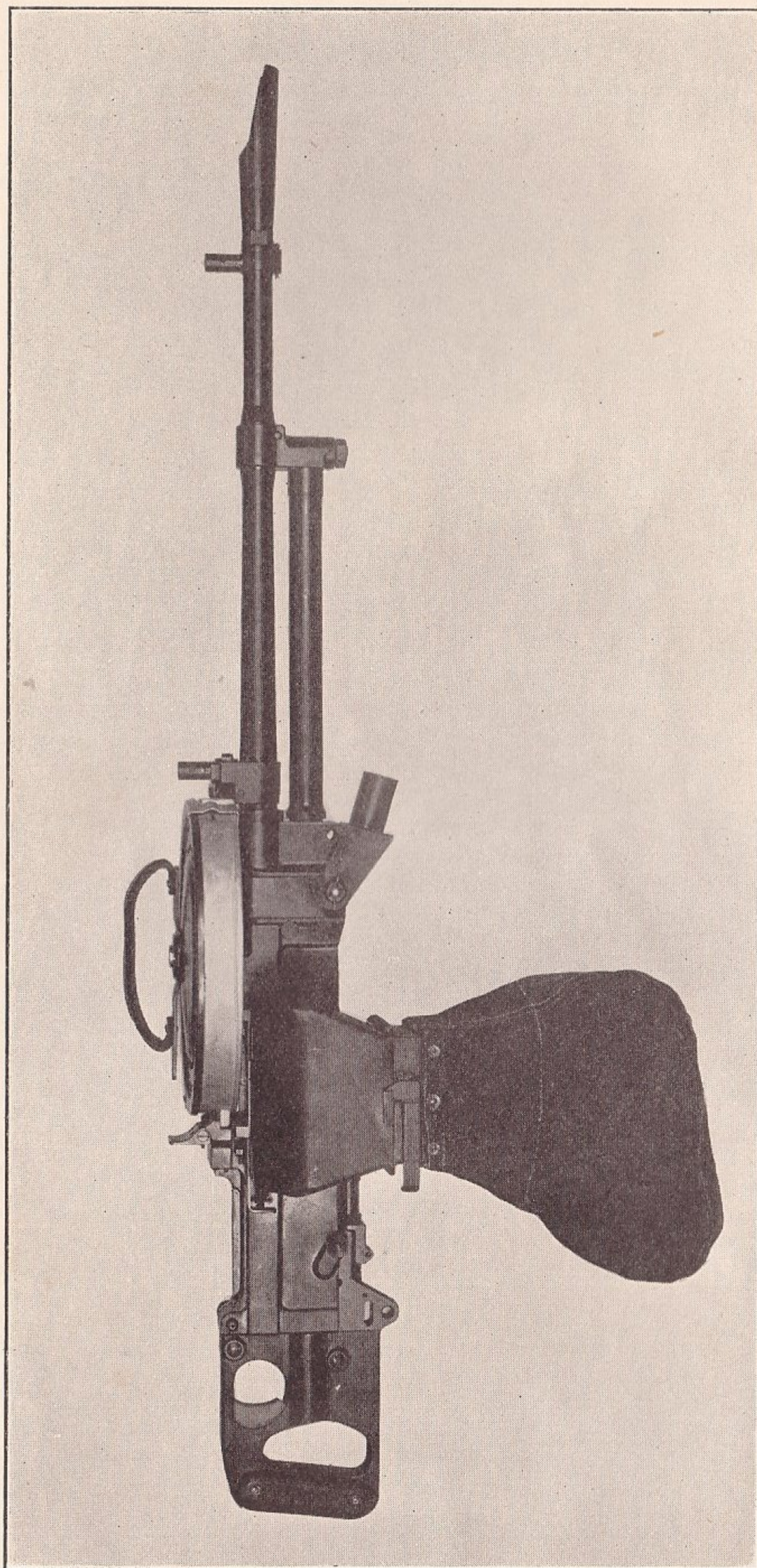
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MAGAZINE NO 1 MARK I



Vickers .303 in. gas operated Mk. I, No. 1 gun, with Mk. I magazine and deflector bag.

INTRODUCTORY

1. The Vickers gas operated gun has a high rate of fire combined with a smooth action and is fully automatic. The mechanism is simple, the working parts are few in number and the gun can be stripped for cleaning in less than 1 minute, while the barrel can be readily removed and exchanged without stripping any other part of the gun. One special feature of the gun is that it has no external moving parts. Ammunition is fed from a spring-loaded drum shaped magazine, situated on the top of the gun, which can be removed and exchanged in a few seconds.

2. After the first round has been loaded and fired, the necessary motive power to operate the gun is obtained by deflecting a portion of the propelling gas, through a hole in the barrel near the muzzle, on to a piston. The piston is driven to the rear, compressing the return springs and unlocking and drawing back the breech block. This, as it moves to the rear, ejects the empty cartridge case from the chamber into a deflector bag on the side of the gun. The piston, and consequently the breech block, are held in the rear or cocked position by a sear until the firing control mechanism is operated. The operation of the firing control mechanism releases the sear, allowing the return springs to react and drive forward the piston and the breech block which pushes a round from the magazine into the chamber. After the breech block is locked, the piston continues to move forward and strikes a floating firing pin in the breech block to fire the round. So long as the firing control mechanism is operated, the gun should be automatically loaded and fired until the ammunition in the magazine is expended.

3. The firing control mechanism may take one of several forms. In the original design of gun as described in this handbook, firing is by means of a trigger situated at the rear, but when mounted in aircraft a hydraulic, pneumatic or an electrical device may be employed. The device takes the form of a sear release unit, replacing the spade grip and Mk. I trigger and is described in A.P.1641E, Vol. I. With some installations a trigger operated by a bowden wire may be employed in place of the Mk. I trigger. The Mk. I, No. 2 gun is fitted with a Mk. II trigger which is connected to the Mk. I trigger by a trigger bar.

4. The Mk. I gun can be readily adapted for air service or ground service use by fitting the appropriate No. 1 gun or No. 2 gun attachments.

5. Air flow over the barrel and flash eliminator provides the necessary cooling for these parts of the gun. When mounted in aircraft, arrangements for heating may be made to prevent freezing of the moving parts of the gun.

CHAPTER 1

DESCRIPTION OF THE GUN

VICKERS ·303 IN. GAS OPERATED MK. I, No. 1 GUN

General

6. The gun may be divided naturally into two parts for the purpose of description.

- (i) The stationary portions.
- (ii) The moving portions.

THE STATIONARY PORTIONS

7. The stationary portions consist of the following groups.

- (i) Barrel with gas block, flash eliminator, sight brackets and front magazine catch.
- (ii) Body with rear magazine catch, ejector, gas cylinder and barrel retaining strap.
- (iii) Cocking handle.
- (iv) Body extension with buffer, trigger mechanism and spade grip with safety catch Mk. I.

Barrel (fig. 1 and 3)

8. The barrel is bored longitudinally and rifled to suit S.A. ammunition. At the rear the bore is increased in diameter to form a chamber which is coned to conform to the contour of the Mk. VII cartridge case. Between the chamber and the commencement of the rifling is a second cone which forms a lead for the bullet into the rifling. The breech end of the barrel is supported in the front of the body, being positioned by a collar and having radial projections on the top for engagement with corresponding grooves in the barrel strap, which holds it in the body. To ensure correct assembly the projections are of unequal width. The breech face of the barrel is bevelled to clear the extractor. A small gas hole or vent is drilled radially through the barrel approximately 6 in. from the muzzle, which is reduced in external diameter and threaded to take the flash eliminator. Behind the flash eliminator is fitted and secured the foresight bracket.

Gas block (fig. 3)

9. The gas block is permanently attached to the barrel and a small hole in it coincides with the vent. It is secured by a pin which engages a groove in the underside of the barrel. Beneath the hole in the gas block is a conical cavity below which the block is threaded to receive the gas plug. This plug

is tapered to fit the cavity and is slotted for the gas plug port which has a curved groove on one side through which the gas passes to a hollow spigot on the rear of the gas block and then into the gas cylinder. The bottom of the gas plug is hexagonal and when assembled in the gas block the plug is secured by a split pin.

Flash eliminator (fig. 3)

10. The flash eliminator, which diminishes flash from the gun during firing, is conical in shape and is screwed to the muzzle end of the barrel. It is provided with flats on its exterior for the combination spanner, used in fitting and removing, and has a hole in a projecting lug for a split pin which prevents it from unscrewing.

Foresight bracket (fig. 3)

11. The foresight bracket fits round the barrel behind the flash eliminator and is located radially by a key which is permanently attached to the barrel. Formed on the bracket is a hollow vertical projection for the attachment of the foresight which is secured by a pin.

Rear sight bracket (fig. 3)

12. The rear sight bracket is riveted to the top of the front magazine catch bracket which is permanently attached to the barrel near the breech end. The bracket is provided with a hollow vertical projection for the attachment of the rear sight which is secured by a split pin. When a reflector sight is used this is fitted into a slot at the rear of the body.

Front magazine catch (fig. 3)

13. The front magazine catch is a spring-loaded plunger which is retained in the bracket on the top of the gun by a split pin. The catch is chamfered on the top and relieved on the underside to facilitate positioning the front catch plate of the magazine.

Body (fig. 1 and 4)

14. The body is of a general rectangular shape and is prepared at the front to form a support for the breech end of the barrel. A slot in the top and vertical grooves in the sides accommodate the barrel strap which is secured by the bolt of the mounting-yoke which passes transversely through a hole in the body. A second hole is drilled through the front for the bolt of the trigger guard frame.

15. Behind the barrel support and extending to the rear of the body a square hole is formed to accommodate and guide the breech block. The right hand side is recessed to clear the extractor and is provided with an orifice to allow the empty cartridge cases to be ejected. A bracket is screwed to the body above the orifice and has a projection which engages the catch on the frame of the deflector bag.

16. A second orifice is cut in the top of the body to enable ammunition to be loaded from the magazine. To the rear of this orifice there is a projection which is prepared to accommodate the rear magazine catch and under the projection the locking shoulder is fitted and secured by a pin. On the left side of the body there is a slotted box-shaped projection which accommodates the ejector.

17. Below and parallel with the square hole there is a round hole into the front of which fits the rear end of the gas cylinder, the remainder of the hole acting as a piston-way for the rear of the piston rod. Fitted transversely through the body and towards the front are the top and bottom piston stops which project into the piston-way and form a stop for the piston at the end of its forward movement. These stops are permanently attached to the body.

18. On each side of the piston-way there are keyways which engage corresponding keys on the piston. A slot in the left hand keyway enables the cocking handle lug to engage the piston. On each side of this slot there are grooved recesses in which the cocking handle slide travels, the front being undercut for the cocking handle catch. At the rear end the grooves are relieved to facilitate assembling and dismantling the cocking handle slide. A clearance in the top of the piston-way allows a projection at the rear end of the piston to engage the breech block.

19. The rear of the body is suitably shaped to receive the body extension which is retained in position by upper and lower securing pins. These pins are held transversely by spring-loaded retaining plungers, which are housed in projections formed on the sides of the body. The plungers engage grooves, cut for the greater part of the length of the securing pins, and allow the pins to be withdrawn sufficiently to enable the body extension to be removed.

20. The bottom plate of the body is riveted in position and is prepared with two hinge lugs to enable the deflector bag to be attached to the gun.

Gas cylinder (fig. 1 and 9)

21. The gas cylinder is tubular in shape and forms a guide for the piston head as this travels backwards and forwards.

The front end is enlarged to fit over the spigot on the gas block, the rear end fitting into the front of the body. The gas cylinder is a loose fit and has a number of radial holes drilled in it to allow the gas to be readily expelled as the piston moves forward.

Barrel strap (fig. 1 and 4)

22. The barrel strap is U-shaped and is grooved on the inside to engage the projections on the barrel. Two holes are drilled through the lower part of the strap, towards the front, for the retaining bolt which also secures the mounting yoke.

Rear magazine catch (fig. 4 and 8)

23. The rear magazine catch has two projections at the front which are chamfered on the top and relieved on the underside to facilitate engagement with the rear catch plate of the magazine. It slides longitudinally on the projection on the top of the body and is kept up to its work by a spring which is retained between a plug in the projection and a recess in the bottom of the catch. A lever, to enable the catch to be disengaged and the magazine removed, is pivoted between two lugs on the top of the projection, its lower end being suitably shaped to engage the front of the catch.

Locking shoulder (fig. 1, 4 and 12)

24. The locking shoulder, which supports the breech block against the shock of discharge, is housed in the top of the body and is retained by a pin. A projection on the locking shoulder is recessed for engagement with the catch on the frame of the deflector bag. The locking shoulder must not be removed except for purposes of repair in a depot.

Ejector (fig. 8)

25. The ejector is a short lever with a lug at each end and having trunnions towards the rear about which it rotates. The trunnions are partly cut away for assembly in the bayonet pattern slots in the projection, on the left hand side of the body, and form the axis of the ejector. The rear lug is engaged by a cam on the breech block as this travels to the rear, while the front lug engages and knocks the empty cartridge case from the face of the breech block as the ejector rotates. A cover of thin steel plate is dovetailed into the projection on the body to retain the ejector in position, a thumb piece being riveted to the cover to facilitate removal.

Cocking handle (fig. 1 and 8)

26. The cocking handle, the object of which is to enable the piston and breech block to be withdrawn by hand to the cocked

position, is situated on the left hand side of the body. After the gun has been cocked, the handle is returned to its forward position where it is retained by a spring-loaded catch. The cocking handle is hollow and is pivoted at the front of the cocking handle slide, being held in its normal position by a small torsional spring which bears against the inside of the cocking handle and a projection on the cocking handle slide.

Cocking handle slide (fig. 8)

27. The cocking handle slide which governs the movement of the cocking handle is suitably shaped to slide longitudinally in the grooved recess in the body. It has a projection on the outside over which the cocking handle fits and carries a spring loaded catch. A slot is cut in the slide for the cocking handle lug by means of which it engages the piston.

Cocking handle catch (fig. 8)

28. The cocking handle catch is a right-angle shaped lever and is mounted on the same axis pin as the cocking handle. One arm fits inside and is engaged by the cocking handle when this is operated, the other arm being provided with a claw which engages the end of the grooved recess in the body. The spring bears between the projection on the cocking handle slide and the arm of the catch.

Cocking handle lug (fig. 8)

29. The cocking handle lug fits in a slot to the rear of the cocking handle slide and projects through the slot in the body, to engage the piston when the cocking handle is pulled to the rear. It is held in position by a pin which is retained by a split pin.

Body extension (fig. 1, 4, 5 and 12)

30. The body extension is shaped to fit the rear of the body and to accommodate the buffer and trigger mechanism, suitable holes being drilled for the various axis pins. Two holes are also drilled through the extension for its securing pins and two for the screws of the spade grip. Another hole is drilled through a projection on the underside for the attachment of the gun to the mounting or for the attachment of the trigger guard frame of the No. 2 gun.

Buffer (fig. 5 and 12)

31. The buffer against which the piston rebounds is housed in a hole drilled through the rear of the body extension in line with the piston, the rear of the hole is threaded for the buffer spring screw which is retained by a transverse pin. The buffer

is cylindrical in shape and is enlarged at the rear to form a stop which limits its forward movement. It is bored from the front to accommodate and form a bearing for the rear of the return springs rod. The buffer spring is a helical compression spring and is retained against the rear of the buffer by the buffer spring screw. A steel buffer disc is placed between the spring and the screw.

Trigger mechanism (fig. 5 and 12)

32. The trigger mechanism is so designed that unless the trigger is fully released the sear will not rise and engage the bent on the piston, a spring-loaded sear catch having been incorporated for this purpose.

Trigger Mk. I (fig. 5 and 12)

33. The Mk. I trigger pivots on a pin at the rear of the body extension, the buffer screw forming a stop for it in its normal position. The top of the trigger is suitably shaped for engagement with the Mk. I safety catch, when this is set to safe, while at the bottom a hole is drilled for the pin of the trigger rod.

Trigger rod with trigger spring sleeve and cap (fig. 5 and 12)

34. The trigger rod, which transfers the motion of the trigger to the sear, is rectangular in section and is pinned at the rear to the trigger. At the front the rod is forked to engage the sear, while behind the fork a stop is riveted. The trigger spring sleeve and trigger cap are assembled on the rod. The sleeve houses the trigger spring and the cap, butting against the trigger, forms a rear bearing for the spring. When assembled in the body extension the sleeve bears against a shoulder in the former, being prevented from turning by a lug. The sear catch spring is carried on the rod in front of the sleeve and the sear spring in the lug on the sleeve.

Sear and sear buffer (fig. 5 and 12)

35. The sear is approximately L-shaped and is pivoted in a projection at the front of the body extension. The axis pin holes are elongated to allow of slight longitudinal movement of the sear when it is engaged by the bent of the piston. The movement causes the sear buffer spring to be compressed and absorb the shock of engagement. The underside of the sear bent is shaped to engage a transverse pin in the body extension as the sear moves forward, this ensures that the sear will rise to its fullest extent, and a lug at the rear of the bent engaging the body extension limits the upward movement. The sear spring is flat and as mentioned previously is carried on the lug of the trigger spring sleeve. The front of the sear is cut away

to bear against the sear lever which is pivoted in the body extension and bears against the sear buffer plunger. The sear buffer spring is housed in a sleeve which is screwed into the front of the body extension and is retained against the head of the plunger by a screwed plug and pin.

Sear catch (fig. 5 and 12)

36. The sear catch, which prevents the sear from rising in the event of the trigger being eased, is pivoted in the bottom of the body extension. It has two parallel arms which pass one on either side of the trigger rod behind the stop, the arms having projections at their extremities which engage the lug on the sear when the trigger is pulled. The catch is functioned by its spring which is held in initial compression against the front of the trigger spring sleeve. When the trigger is fully released the stop at the front of the trigger rod disengages the catch allowing the sear to rise.

Spade grip (fig. 1, 4 and 6)

37. The spade grip is a hollow steel frame and fits partly over the body extension to which it is secured by two screws. It is cut away to enable the trigger to be operated and also to form a grip. Two wooden side pieces are clamped on the grip by two screws. The upper screw also forms the axis of the Mk. I safety catch which is operated through a slot in the top of the spade grip at the rear.

Safety catch Mk. I (fig. 6)

38. The Mk. I safety catch is operated by a small knurled thumbpiece which also pivots on the upper side piece screw. The thumbpiece is semi-circular in shape, hollow, and has a projection near its axis, to which a plunger is pinned. The letters S and F are engraved upon the thumbpiece. The safety catch is connected to the thumbpiece by the plunger which passes through a plunger guide pivoted on trunnions in a slot in the catch. The spring presses between a shoulder on the plunger and the plunger guide and ensures that the catch is retained in the safe or fire position.

THE MOVING PORTIONS

39. The moving portions consist of the following groups:—

- (i) Piston and return springs with rod.
- (ii) Breech block with firing pin, feed piece and extractor.

Piston (fig. 9 and 12)

40. The piston is a hollow steel rod having a head formed at its front end. The head is cup-shaped to retain any fouling, thus preventing its spreading over the periphery of the head, and it also has annular grooves the edges of which help to keep the gas cylinder free from fouling. The rod is enlarged in diameter near the middle to form a bearing for it in the gas cylinder. The rear of the piston has keys on each side which engage corresponding keyways in the body. In the left hand keyway is formed a groove for the cocking handle lug and when the cocking handle is pulled to the rear, this lug engages the end of the groove to withdraw the piston. On the underside at the rear is formed a bent which engages the sear to hold the piston in the cocked position.

41. On the top of the piston at the rear are two projections having inclined parallel surfaces which engage corresponding surfaces in the bottom of the breech block. The front inclined surface lowers the breech block disengaging it from the locking shoulder as the piston is moved backwards, while the other inclined surface raises the breech block to its locked position in front of the locking shoulder as the piston approaches the firing position. The rear projection has a flat on the top which supports the rear of the breech block in the locked position when the piston is right home. The front projection is shaped to form a hammer and strikes the firing pin as the piston reaches the end of its forward movement, which is arrested when a shoulder on the piston meets the stops in the body.

Return springs and return springs rod (fig. 9 and 12)

42. The return springs consist of an outer and inner spring the front ends of which bear against shoulders inside the piston. The rear ends of the springs are supported on the rod which has a shoulder near its rear end to form a bearing for the springs. The rear of the rod is supported inside the buffer against which the shoulder abuts.

Breech block (fig. 10 and 11)

43. The breech block is rectangular in shape, its underside being recessed to accommodate the front projection on the piston. It is provided with inclined surfaces to engage those of the piston. On the right hand side towards the front, the breech block is recessed and undercut to accommodate the extractor spring and a hole is drilled and threaded for the firing pin screw which also retains the extractor spring. At

the front the breech block is suitably cut away to house the extractor and is shaped to receive the base of the cartridge case. A cam on the left hand side of the breech block controls the action of the ejector while at the front there is a slot to enable the ejector to operate and eject the empty cartridge case.

44. The breech block is recessed at the top towards the front to accommodate the feed piece with its plunger and spring, the axis pin of the feed piece passing transversely through the breech block. At the rear there is a projection which engages the locking shoulder in the body to support the breech block in the firing position. The breech block is drilled and bored longitudinally to receive the firing pin and spring, a small gas escape hole being drilled at an angle from the underside into the firing pin hole.

Firing pin (fig. 11)

45. The firing pin is cylindrical in shape, tapering to a point at the front and having a head formed at the rear. A shoulder towards the rear forms a bearing for the spring, the front of which abuts against a shoulder in the breech block to retain the firing pin in the withdrawn position until the head is struck by the projection on the piston. The firing pin retaining screw engages against the top of the head to retain the firing pin in the breech block.

Feed-piece (fig. 10 and 11)

46. The feed-piece is a short lever pivoted in the recess in the breech block and is designed to push a round from the magazine into the chamber during the forward movement of the breech block. A plunger and spring are positioned under the front of the feed-piece to ensure engagement with the base of the cartridge case.

Extractor (fig. 10 and 11)

47. The extractor is held longitudinally by keys and key-ways and laterally by a flat spring in its recess in the breech block. The spring allows the extractor to move outwards sufficiently to ride over, and engage the rim of the cartridge case in the chamber as the breech block reaches the firing position. The spring is held in its undercut recess in the breech block by the firing pin screw.

VICKERS .303 IN. GAS OPERATED MK. I, No. 2 GUN

General

48. The Mk. I, No. 2 gun differs from the Mk. I, No. 1 gun as follows:—

- (i) A shoulder-piece is fitted in place of the spade grip.
- (ii) It is fitted additionally with a trigger guard frame, Mk. II trigger, trigger bar and Mk. II safety catch.
- (iii) The mounting yoke bolt, which secures the barrel strap, is replaced by one having trunnions for the attachment of the gun to the tripod mounting, the mounting yoke being removed.

49. In other respects the two guns are identical and para. 6 to 47 should be referred to for information relating to those parts of the No. 2 gun which are common to the No. 1 gun. A description of the shoulder-piece, trigger guard frame and their components follows.

Shoulder-piece (fig. 2, 4 and 7)

50. The shoulder-piece body is of steel sheet and is shaped to fit over the body extension and Mk. I trigger being held in position by two screws which are secured by split pins. On the underside at the front are two projections through which passes the securing pin of the trigger guard frame. This pin is held in a manner similar to the securing pins of the body extension, the plunger and spring being housed in a projection on the side of the shoulder-piece. Guide pins are riveted inside the shoulder-piece to support the rear portion of the trigger bar. A shoulder pad, consisting of a wood block, sorbo pad and leather cover, is secured to the rear of the shoulder-piece by wood screws.

Trigger guard frame (fig. 2 and 7)

51. The trigger guard frame is of steel sheet and is in general appearance trough-shaped. It is held in position, against the underside of the gun, by a bolt which passes through the forward hole in the body and by a securing pin which passes through the rear mounting lug on the body extension. At the front a wood block is secured by two screws to form a hand grip and near the middle is a pistol grip

the front the breech block is suitably cut away to house the extractor and is shaped to receive the base of the cartridge case. A cam on the left hand side of the breech block controls the action of the ejector while at the front there is a slot to enable the ejector to operate and eject the empty cartridge case.

44. The breech block is recessed at the top towards the front to accommodate the feed piece with its plunger and spring, the axis pin of the feed piece passing transversely through the breech block. At the rear there is a projection which engages the locking shoulder in the body to support the breech block in the firing position. The breech block is drilled and bored longitudinally to receive the firing pin and spring, a small gas escape hole being drilled at an angle from the underside into the firing pin hole.

Firing pin (fig. 11)

45. The firing pin is cylindrical in shape, tapering to a point at the front and having a head formed at the rear. A shoulder towards the rear forms a bearing for the spring, the front of which abuts against a shoulder in the breech block to retain the firing pin in the withdrawn position until the head is struck by the projection on the piston. The firing pin retaining screw engages against the top of the head to retain the firing pin in the breech block.

Feed-piece (fig. 10 and 11)

46. The feed-piece is a short lever pivoted in the recess in the breech block and is designed to push a round from the magazine into the chamber during the forward movement of the breech block. A plunger and spring are positioned under the front of the feed-piece to ensure engagement with the base of the cartridge case.

Extractor (fig. 10 and 11)

47. The extractor is held longitudinally by keys and key-

"VICKERS 303-IN. GAS OPERATED MK. I, NO. 3 GUN

47A. The Mk. I, No. 3 gun differs from the Mk. I, No. 1 gun in being fitted with remote control for use in the air. A dust cover replaces the spade grip and a special trigger with bowden wire attachment is fitted instead of the Mk. I trigger. A bracket to support the bowden cable is fitted to the underside of the body extension and secured by split pins."

VICKERS 303 IN. GAS OPERATED MK. I, No. 2 GUN

General

48. The Mk. I, No. 2 gun differs from the Mk. I, No. 1 gun as follows:—

- (i) A shoulder-piece is fitted in place of the spade grip.
- (ii) It is fitted additionally with a trigger guard frame, Mk. II trigger, trigger bar and Mk. II safety catch.
- (iii) The mounting yoke bolt, which secures the barrel strap, is replaced by one having trunnions for the attachment of the gun to the tripod mounting, the mounting yoke being removed.

49. In other respects the two guns are identical and para. 6 to 47 should be referred to for information relating to those parts of the No. 2 gun which are common to the No. 1 gun. A description of the shoulder-piece, trigger guard frame and their components follows.

Shoulder-piece (fig. 2, 4 and 7)

50. The shoulder-piece body is of steel sheet and is shaped to fit over the body extension and Mk. I trigger being held in position by two screws which are secured by split pins. On the underside at the front are two projections through which passes the securing pin of the trigger guard frame. This pin is held in a manner similar to the securing pins of the body extension, the plunger and spring being housed in a projection on the side of the shoulder-piece. Guide pins are riveted inside the shoulder-piece to support the rear portion of the trigger bar. A shoulder pad, consisting of a wood block, sorbo pad and leather cover, is secured to the rear of the shoulder-piece by wood screws.

Trigger guard frame (fig. 2 and 7)

51. The trigger guard frame is of steel sheet and is in general appearance trough-shaped. It is held in position, against the underside of the gun, by a bolt which passes through the forward hole in the body and by a securing pin which passes through the rear mounting lug on the body extension. At the front a wood block is secured by two screws to form a hand grip and near the middle is a pistol grip

which is provided with wooden side pieces. In front of the pistol grip is a trigger guard and above it is fitted the Mk. II safety catch. Guide pins are riveted inside the frame to support the front portion of the trigger bar.

Note.—The fitting of the trigger guard frame prevents the attachment of the deflector bag.

Trigger Mk. II (fig. 2 and 7)

52. The Mk. II trigger, which facilitates the firing of the gun from the shoulder, is connected to the Mk. I trigger in the body extension by the trigger bar. It is mounted on an axis pin in the trigger guard frame, the axis pin being secured by a split pin. A projection is formed at the top of the trigger for the attachment of the trigger bar.

Trigger bar (fig. 7)

53. The trigger bar is in two parts, the front portion being accommodated in the trigger guard frame and the rear portion in the shoulder-piece. Each part consists of two rods which pass on either side of the body extension when the components are assembled to the gun. The rods are held rigid by distance pieces and are supported on the guide pins mentioned previously. The front portion is connected to the Mk. II trigger by a pin and has slots cut in it for engagement with the Mk. II safety catch. When the trigger guard frame and shoulder-piece are fitted to the gun, projections on the front portion of the trigger bar engage corresponding projections on the rear portion, the distance piece of which bears against the lower end of the Mk. I trigger in the body extension.

Safety catch Mk. II (fig. 2 and 7)

54. The Mk. II safety catch is held in position in the trigger guard frame by a bayonet joint. It engages the slots in the trigger bar when set to "Safe" and locks the action, but when set to "Fire" a clearance on the catch allows the mechanism to be operated. A spring steel plate having two studs at each end is secured inside the trigger guard frame by a central rivet. The studs project through the frame and hold the catch in the safe or fire position and also limit the movement of the catch and prevent disengagement of the bayonet joint.

CHAPTER 2

MECHANISM OR ACTION OF THE GUN

General

55. Owing to the very high rate of fire of this gun all the mechanical operations are practically instantaneous, the time interval between explosions being about $\frac{1}{16}$ sec.

Cocking by hand

56. When the cocking handle is pulled to the rear the catch is released and allows the cocking handle to move backwards. The cocking handle lug engaging the piston causes this to be drawn to the rear to unlock and carry with it the breech block. At the same time the return springs are compressed. If the trigger is released the piston bent will ride over the sear and depress it, but the sear spring reasserting itself will cause the sear to rise and engage the bent on the piston to hold it in the cocked position.

Forward movement. (Assume a loaded magazine to be in position) (fig. 12)

57. When the trigger is pressed the sear is disengaged from the piston bent and the return springs return the piston and breech block to the firing position. As the breech block moves forward the feed-piece engages the base of a cartridge in the magazine and pushes the round forward. The bullet is deflected downwards by the bullet guide on the magazine into the chamber and the final forward movement of the breech block rams home the round, the extractor riding over and engaging the rim of the cartridge case.

58. The piston continues its travel after the breech block is right home and the inclined surface on the rear projection, engaging the corresponding surface on the breech block, causes the rear of the breech block to rise and engage in front of the locking shoulder. The breech block is held in front of the locking shoulder by the flat at the rear of the piston, which locks it against the force of the explosion. During the final movement of the piston, the front projection strikes the firing pin to fire the round, the piston coming to rest against its stops in the breech casing.

Note.—The locking shoulder and piston stops indicated in fig. 12A are not the actual fittings but have been drawn on the figure to show their relative positions.

which is provided with wooden side pieces. In front of the pistol grip is a trigger guard and above it is fitted the Mk. II safety catch. Guide pins are riveted inside the frame to support the front portion of the trigger bar.

Note.—The fitting of the trigger guard frame prevents the attachment of the deflector bag.

Trigger Mk. II (fig. 2 and 7)

52. The Mk. II trigger, which facilitates the firing of the gun from the shoulder, is connected to the Mk. I trigger in the body extension by the trigger bar. It is mounted on an axis pin in the trigger guard frame, the axis pin being secured by a split pin. A projection is formed at the top of the trigger for the attachment of the trigger bar.

Trigger bar (fig. 7)

53. The trigger bar is in two parts, the front portion being accommodated in the trigger guard frame and the rear portion in the shoulder-piece. Each part consists of two rods which pass on either side of the body extension when the components are assembled to the gun. The rods are held rigid by distance pieces and are supported on the guide pins mentioned previously. The front portion is connected to the Mk. II trigger by a pin and has slots cut in it for engagement with the Mk. II safety catch. When the trigger guard frame and shoulder-piece are fitted to the gun, projections on the front portion of the trigger bar engage corresponding projections on the rear portion, the distance piece of which bears against the lower end of the Mk. I trigger in the body extension.

Safety catch Mk. II (fig. 2 and 7)

54. The Mk. II safety catch is held in position in the trigger guard frame by a bayonet joint. It engages the slots in the trigger bar when set to "Safe" and locks the action, but when set to "Fire" a clearance on the catch allows the mechanism to be operated. A spring steel plate having two studs at each end is secured inside the trigger guard frame by a central rivet. The studs project through the frame and hold

"VICKERS 303-IN. GAS OPERATED MK. I, NO. 4 GUN

54A. The Mk. I, No. 4 gun is for use in armoured cars and differs from the Mk. I, No. 3 gun in being fitted with a Mk. II gas plug, which reduces the speed of fire, and in having the front hand grip made of hard rubber."

CHAPTER 2

MECHANISM OR ACTION OF THE GUN

General

55. Owing to the very high rate of fire of this gun all the mechanical operations are practically instantaneous, the time interval between explosions being about $\frac{1}{16}$ sec.

Cocking by hand

56. When the cocking handle is pulled to the rear the catch is released and allows the cocking handle to move backwards. The cocking handle lug engaging the piston causes this to be drawn to the rear to unlock and carry with it the breech block. At the same time the return springs are compressed. If the trigger is released the piston bent will ride over the sear and depress it, but the sear spring reasserting itself will cause the sear to rise and engage the bent on the piston to hold it in the cocked position.

Forward movement. (Assume a loaded magazine to be in position) (fig. 12)

57. When the trigger is pressed the sear is disengaged from the piston bent and the return springs return the piston and breech block to the firing position. As the breech block moves forward the feed-piece engages the base of a cartridge in the magazine and pushes the round forward. The bullet is deflected downwards by the bullet guide on the magazine into the chamber and the final forward movement of the breech block rams home the round, the extractor riding over and engaging the rim of the cartridge case.

58. The piston continues its travel after the breech block is right home and the inclined surface on the rear projection, engaging the corresponding surface on the breech block, causes the rear of the breech block to rise and engage in front of the locking shoulder. The breech block is held in front of the locking shoulder by the flat at the rear of the piston, which locks it against the force of the explosion. During the final movement of the piston, the front projection strikes the firing pin to fire the round, the piston coming to rest against its stops in the breech casing.

Note.—The locking shoulder and piston stops indicated in fig. 12A are not the actual fittings but have been drawn on the figure to show their relative positions.

Backward movement. (Assume the gun to have just fired) (fig. 12)

59. After the bullet has passed the gas vent in the barrel a portion of the propelling gas escapes into the gas block and is deflected by the gas plug port on to the head of the piston driving it to the rear and compressing the return springs. The piston moves about $\frac{3}{16}$ in. before the inclined surface on the front projection engages the corresponding surface on the breech block to lower this and disengage it from the locking shoulder in the body. Whilst this movement is taking place the rear of the breech block is supported by the horizontal flat on the rear of the piston, which ensures that the breech block will remain locked to the gun until the bullet has left the muzzle, and the firing pin is withdrawn into the breech block by its spring.

60. The breech block is now carried to the rear by the piston and, as the breech block moves away from the barrel, the extractor extracts the empty cartridge case from the chamber. The cam on the left hand side of the breech block causes the ejector to rotate sharply and engage the base of the empty cartridge case which is ejected, through the orifice in the breech casing, into the deflector bag. As the feed-piece passes under the next round in the magazine it is deflected downwards, being returned into position by its spring, ready to engage the base of the cartridge when the breech block moves forward.

61. The backward movement is arrested when the piston strikes the buffer in the body extension. The piston rebounds and if the trigger is kept pressed the cycle of operations is repeated until the last round in the magazine has been fired. Should the trigger be released before the ammunition is expended, the sear will rise and engage the bent on the piston, as this begins to move forward, to retain the piston and breech block in the cocked position. Thus the gun does not cease firing with a live round in the chamber.

Action of the firing mechanism (fig. 12)

62. When the Mk. I trigger is operated, either direct or through the medium of the Mk. II trigger, it pivots on its axis pin and the lower end pushes forward the trigger rod which engages the sear. The sear is caused to rotate until the bent is drawn below the level of the projection on the body extension and clear of the piston bent. The movement of the trigger rod compresses the trigger spring and also allows the sear catch spring to react. The latter spring bearing against

the sear catch causes this to rotate and engage the lug on the rear of the sear and retain it against the pressure of the sear spring.

63. The trigger is returned to its normal position by its spring and draws back the trigger rod when pressure is released. The sear, however, does not rise immediately as it is retained by the sear catch. As the trigger rod nears its normal position, a stop on its inner end bears against the sear catch and disengages this from the sear, which rises under the influence of its spring. When the piston rebounds off the buffer the bent strikes the sear and drives it forward. The sear bearing against the sear lever causes this to swing forward against the plunger and compress the sear buffer spring, which absorbs the shock of engagement and then, reasserting itself, returns the sear to its normal position.

64. If a hydraulic, pneumatic or an electrical firing control mechanism is fitted, the Mk. I trigger is removed and its action is simulated by a plunger in the device which engages the trigger rod, the action of the gun mechanism being the same as already described.

Safety arrangements

65. The gun cannot be fired until after the breech has been locked for the following reasons:—

- (i) The design of the mechanism is such that the piston must raise the rear of the breech block in front of the locking shoulder before it can move forward independently to strike the firing pin.
- (ii) If the breech block is not raised the piston will jam.
- (iii) The firing pin is retained within the breech block by its spring until it is struck by the piston.

CHAPTER 3

MISCELLANEOUS

DEFLECTOR BAG (fig. 1 and 13)

66. The deflector bag which retains the empty cartridge cases as they are ejected from the gun consists of two main parts :—

- (i) The frame.
- (ii) The bag.

Frame

67. The frame is of sheet steel and is open at one side and at the bottom. A bracket is riveted below the side opening to enable the frame to be hinged to the lugs on the body, the hinge pin being secured by a split pin. At the top there is fitted a spring-loaded catch by means of which the frame is held against the ejection orifice of the body. Two spring steel baffle plates are riveted inside the frame, one on the side opposite to the opening and the other at the rear. The object of these plates is to deflect the empty cartridge cases downwards into the bag. Flanges are formed at the bottom of the frame to engage corresponding flanges on the bag and a lug is riveted in position to engage the catch of the latter.

Bag

68. The bag is in two parts which are riveted together. The top is of sheet steel and is flanged to fit the bottom of the frame, a spring-loaded catch being provided to retain the bag on the frame. The bottom portion is of stout canvas and is provided with a U-shaped steel stiffener which is riveted to the top of the bag.

MAGAZINE MK. I (fig. 1 and 14)

69. The ^{NOT} MK. I magazine is designed to hold 60 rounds and consists of three main parts :—

- (i) Magazine body.
- (ii) Top plate with separators, main spring, spring casing and bullet support with platform and spring.
- (iii) ~~Handle with bush~~ ^{LADING PLATE} and retaining pin.

Magazine body

70. The magazine body consists of a bottom plate and band riveted together and having two catch plates situated at the front and rear on the outside. The catch plates engage the

front and rear magazine catches on the gun, when the magazine is in position. Near the catch plates are two spring clips which retain the top plate when the magazine is assembled.

71. A slot is cut in the bottom plate to coincide with the orifice in the gun body. On either side of this slot there are lips which project into the orifice when the magazine is in position and, being suitably shaped, retain the round until it is pushed out of the magazine by the feed-piece. At the front of the slot on the underside is a bullet lead which deflects the round downwards as it is pushed forward. Near the middle of the bottom plate is a flat spring which acts as a support and guide for the bullets and, in the centre is a hollow spigot or centre post to which the bush is pinned when in position.

72. Inside the band, which has a flange at the top, there is a cartridge head guide ring which forms a gallery to support the base of the cartridge cases, a cartridge guide being provided to deflect the cartridges through the slot in the bottom plate.

Top plate and main spring

73. The top plate is assembled on the top of the magazine body and is secured by the spring clips which project over its edge. The separators, which locate the rounds radially in the magazine, are riveted to the underside of the plate. A spring casing which is in the form of a hub, is also positioned on the underside of the plate and houses a clock pattern main spring. The outer end of the spring is anchored to the casing and its inner end is slotted to engage a projection on the bush which, when in position, passes through a hole in the centre of the top plate.

Bullet support with platform and spring

74. The bullet support is attached to a loose coil spring which, when the magazine is assembled, is positioned outside the spring casing and bears between the underside of the top plate and the bullets, holding these steady in the magazine. To the bullet support is riveted a platform the object of which is to support the last round in the correct position in the lips, ready for engagement by the feed-piece. A stop pin inside the band limits the travel of the platform when the magazine is being loaded.

LOADING LEVER

Handle with bush

75. The ~~handle~~ is a flat steel ~~lever~~ which has a hollow bush near the centre and a slot for its retaining pin. A leather carrying strap is riveted to the ~~handle~~. When the magazine is

LEVER

Magazine No. 2 Mk. I (fig. 15)

77. The No. 2, Mk. I magazine is designed to hold 100 rounds and consists of the following parts:—

- (i) Magazine body.
- (ii) Follower.
- (iii) Top plate with separators, main spring and cover.
- (iv) Loading lever with handle and bush.

Magazine body

78. The magazine body consists of a bottom plate and band, spot welded together with catch plates riveted and spot welded at the front and rear. The catch plates engage the front and rear magazine catches on the gun, when the magazine is in position. A slot is cut in the bottom plate to coincide with the orifice in the gun body and a flange is spot welded to the top of the band. On either side of the slot are lips which project into the orifice in the gun body when the magazine is in position and, being suitably shaped, retain the round until it is pushed out of the magazine by the feed piece. The left lip is movable and pivots on a screw which is spot welded to the bottom plate, a washer, castellated nut and split pin being provided to hold the lip on the screw. The movable lip is normally retained in position by a flat steel spring catch, one end of which is riveted to the outside of the band. On the underside of the bottom plate at the front of the slot is a bullet lead which deflects the round downwards as it is pushed forward.

79. In the centre of the bottom plate is a cylinder which forms an abutment for the noses of the bullets. The cylinder is held in position by a flange on the bottom of a centre post which is riveted to the bottom plate and spot welded. Surrounding the cylinder is a bullet guide of wire which supports and separates the layers of bullets. One end of the bullet guide is spot welded to a bracket which is riveted to the bottom plate, the other end engages a slot in the top edge of the cylinder. In the top of the centre post is a groove for the securing plate of the loading lever and holes for the top plate retainer. A cartridge retaining spring is riveted to the bottom plate near the inner end of the slot to hold the following round while that in the lips is being fed.

80. A cartridge head guide ring is welded inside the band and forms a gallery to support the bases of the cartridge cases. Near the lower end of the guide ring and riveted to the bottom plate is a cartridge lead which deflects the cartridges through the slot. Near the top of the guide ring is a stop for the follower.

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Follower

81. The follower is placed in the magazine to support the last round in the lips, its shape corresponds approximately with that of a complete round of ammunition. A tail is riveted near the base to keep the follower clear of the feed piece, preventing it from being fed out of the magazine.

Top plate

82. The top plate is assembled on the magazine body and is held by the securing plate of the loading lever which engages the groove, and the top plate retainer which engages the holes in the centre post. The separators, which locate the rounds radially in the magazine, are riveted to the underside of the top plate. In the middle of the top plate is formed a shallow recess which houses the main spring. A hollow centre piece is riveted to the underside of the top plate and fits over the centre post to form a bearing for the top plate when the magazine is assembled. Two studs are riveted to the top plate for engagement with the filling machine.

83. The main spring is of clock pattern, its outer end being anchored to a pin which is held in position by a flanged ring riveted to the top plate and spot welded; its inner end is anchored to a hub having flats to engage corresponding flats on the bush. The spring housing is closed by the top plate cover in which is an inspection window. The window which is provided with a cover, enables the spring to be examined for tensioning. When the magazine is fully loaded and the spring fully tensioned, no coils should be visible through the window.

Loading lever

84. The lever is a flat steel bar to which is riveted a leather carrying handle. Near the centre of the lever is a hollow bush which fits over the centre post and has flats formed on it to engage those of the hub. Towards one end of the lever is pivoted a securing plate and top plate retainer. The latter also serves to retain the spring tension.

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assembled, the bush fits over the spigot on the magazine body and a hook shaped projection on its outside engages the inner end of the main spring. The correct tension is given to the main spring by rotating the handle $3\frac{1}{2}$ times in an anti-clockwise direction and securing it by means of the retaining pin.

LOADING LEVER.

Action of the magazine

76. The main spring, through the medium of the top plate, ensures that a round is always in position in the lips of the magazine, ready to be engaged by the feed-piece. As the round is removed, the main spring rotates the top plate which carries with it the ammunition until the next round is retained by the lips.

CARE AND CLEANING

~~8677~~. General instructions for the care, unit storage and cleaning of machine guns are given in A.P. 1641/2 and care of barrels in A.P. 1641/3.

~~8678~~. Operations to be done before, between and after flights, at the 120-hour inspection of the aeroplane and after 2,500 \pm 500 rounds have been fired are laid down in A.P. 1641B, Vol. II, Part 3, Chapter 2.

~~8779~~. Certain parts of the gun are permanently assembled and no attempt must be made to dismantle them in the service.

~~8880~~. When the gun is unloaded the main springs must be eased.

~~8981~~. Avoid damage to the gun, its accessories and spare parts, by exercising care in handling.

~~9082~~. Do not clamp the gun in a vice for the purpose of cleaning, inspection or repair. An attachment for securing machine guns to the bench has been introduced and must always be used.

CHAPTER 4

LOADING, UNLOADING, STOPPAGES AND IMMEDIATE ACTION

LOADING AND UNLOADING

To load the No. 1, Mk. I magazine

91. Ensure that there is no tension on the main spring and remove the retaining pin.

92. Ensure that the platform is visible through the lips and that the hooked end of the loading lever is between 40° and 60° to the left of the front catch plate.

93. Invert the magazine.

94. Hold the magazine with the left hand and take the ammunition in the right hand.

95. Insert a round base first into the lips and push it towards the periphery of the magazine as far as it will go.

96. Rotate the top plate of the magazine, with the fingers of the left hand, until the round is clear of the lips and the next space is visible.

97. Repeat operations 95 and 96 until the magazine is full.

98. Ensure that no space is missed otherwise stoppages may result. As a check upon the loading it is a good plan to have the ammunition arranged in batches of 60 rounds.

99. When the magazine is full the hooked end of the loading lever should coincide with the rear catch plate. A rough check is also provided by noting that, when tensioning the main spring, the loading lever will rotate about $\frac{1}{4}$ to $\frac{1}{3}$ of a turn past the position for the correct number of turns, before maximum tension is reached.

To tension the main spring

100. Place the magazine on the tensioning plate and engage the winding handle with the loading lever of the magazine.

101. Steady the magazine, rotate the loading lever $3\frac{1}{2}$ complete turns in an anti-clockwise direction, replace the retaining pin and remove the winding handle.

To remove the tension from the main spring

102. Place the magazine on the tensioning plate and engage the winding handle with the loading lever of the magazine.

103. Take the weight of the spring and remove the retaining pin.

104. Ease back the winding handle until the tension is removed and if the magazine is not to be unloaded replace the retaining pin.

To unload the No. 1, Mk. I magazine

105. Remove the tension from the main spring.

106. Remove the top plate and take out the bullet support and platform.

107. Invert the magazine when the rounds will fall out.

108. Assemble the magazine and replace the retaining pin.

To load the No. 2, Mk. I magazine

109. Ensure that there is no tension on the main spring and disengage the retainer.

110. Ensure that the securing plate of the loading lever is properly engaged in the groove in the centre post.

111. Ensure that the follower is visible through the lips and that the hooked end of the loading lever coincides approximately with the front catch plate.

112. Invert the magazine and place it on the loading post.

113. Release the movable lip.

114. Hold the magazine with the left hand and take the ammunition in the right hand.

115. Insert a round in the lips and press it into the magazine.

116. Rotate the top plate of the magazine, with the fingers of the left hand, until the round is clear of the lips and the next space is visible.

117. Repeat operations 115 and 116 until the magazine is full.

118. Ensure that no space is missed otherwise stoppages may result. As a check upon loading it is a good plan to have the ammunition arranged in batches of 100 rounds.

119. Replace the movable lip and ensure that it is properly engaged by the spring catch.

To tension the main spring

120. Place the magazine on the tensioning plate and bring the hooked end of the loading lever over the rear catch plate.

121. Engage the winding handle with the loading lever of the magazine.

122. Steady the magazine, rotate the winding handle 5 complete turns in an anti-clockwise direction, engage the retainer and remove the winding handle.

To remove the tension from the main spring

123. Place the magazine on the tensioning plate and engage the winding handle with the loading lever of the magazine.

124. Take the weight of the spring and disengage the retainer.

125. Ease back the winding handle until the tension is removed and if the magazine is not to be unloaded, replace the retainer.

To unload the No. 2, Mk. I magazine

126. Remove the tension from the main spring.

127. Release the movable lip.

128. Rotate the top plate when the rounds will fall out.

To load the gun

129. Cock the gun by pulling the cocking handle to the rear as far as it will go, then return the cocking handle to the forward position and ensure that the catch is engaged.

130. Set the safety catch to "SAFE."

131. Hold the magazine with both hands, with the catch plates in the fore and aft line of the gun, and engage the rear catch plate of the magazine with the rear magazine catch. Press down the front of the magazine and engage the front catch plate.

132. Ensure that the magazine is secure by giving an upward pull on the leather handle.

133. The gun is now ready to fire.

To unload the gun

134. Place the palm of the hand against the rear magazine catch lever and grasp the leather handle with the fingers of the same hand. Press forward the lever and lift the magazine, rear end first, from the gun.

135. If the breech block is in the forward position, cock the gun and press the trigger.

136. If the breech block is in the rear position, press the trigger; cock the gun and again press the trigger.

137. The gun is now unloaded.

STOPPAGES AND IMMEDIATE ACTION

Stoppages

138. The chief stoppages are mainly due to such defects as faulty ammunition, empty or defective magazine, short or broken firing pin, defective extractor or spring, defective feed piece, defective ejector, miss feed and excessive friction. Stoppages can be reduced to a minimum by the careful observance of maintenance instructions.

139. The position of the rear end of the piston, as viewed through the cocking handle slot, or the position of the cocking handle when drawn to the rear to engage the piston, will indicate the action that must be taken to clear a particular stoppage.

Note.—The cocking handle must be drawn back carefully to feel the position of the piston.

The positions are as follows:—

First position.—Rear end of piston below the rear magazine catch lever. Cocking handle fully forward.

Second position.—Rear end of piston to the rear of the rear magazine catch lever. Cocking handle to the front of the rear magazine catch lever.

Third position.—Rear end of piston not visible. Cocking handle below or to the rear of the rear magazine catch lever.

Immediate action

140. Immediate action is the immediate application of a probable remedy for a stoppage, based on the position of the piston and the condition of the gun. It must not be considered to be complete until the gun is again functioning satisfactorily. The immediate action table is set out to give a clear indication of the nature and cause of each stoppage and the probable remedy.

141. The type and number of stoppages which can be cleared in the air will depend upon the installation and the spare parts carried in the aeroplane.

Immediate action table

142.

Position of rear end of piston.	Immediate Action.	Result.	Cause.	Remedy.
First	Cock the gun. Fire and watch the top plate of the magazine.	(1) Gun fires.	(1) Miss fire due to defective ammunition.	Nil.
		(2) Gun fires but repeats stoppage.	(2) No feed due to:— (i) Sluggish magazine. (ii) Incomplete backward movement due to (a) Friction, dirt or chips. (Note.—(ii) (a) May also give a stoppage in the second position.) (b) Fouling in the gas block or gas plug port.	(2) (i) Change magazine. Continue firing. (ii) (a) Cock the gun sharply and fire. If stoppage is repeated, remove magazine, clear gun, wipe away any brass chips which are visible and oil the piston rod through the feed-way in the body. Replace magazine and continue firing. (b) Correct maintenance of gun.
		(3) Top plate rotates but gun does not fire.	(3) Defective firing pin.	(3) Remove magazine. Clear gun. Change breech block. Replace magazine and continue firing.

Immediate action table—continued

Position of rear end of piston.	Immediate Action.	Result.	Cause.	Remedy.
First ..	Cock the gun. Fire and watch the top plate of the magazine.	(4) Top plate does not rotate and gun does not fire. (5) Stoppage repeated after changing magazine in (4).	(4) No feed due to:— (i) Empty magazine. (ii) Defective or dirty magazine. (5) Defective feed piece or feed piece spring.	(4) (i) Change magazine. (ii) Change magazine. Correct maintenance of magazine. (5) Remove magazine. Change breech block. Replace magazine and continue firing.
Second ..	Cock the gun. Remove the magazine. A. If a round is jammed in the lips, change the magazine and continue firing. B. If a round is correct in the lips. Clear the gun. Empty deflector bag. Replace magazine and continue firing.	Gun fires. (1) Gun fires. (2) Gun repeats stoppage.	Defective magazine. (1) Full deflector bag. (2) Separated case.	Correct maintenance of magazine. — (2) Remove magazine. Clear gun, using clearing plug to remove separated case from the chamber. Replace magazine and continue firing.

Immediate action table—continued

Position of rear end of piston.	Immediate Action.	Result.	Cause.	Remedy.
Third ..	Cock the gun. Remove the magazine. A. If there is no round in the body or chamber, change the magazine and continue firing. B. If live round only is in body, clear gun. See that round is correctly positioned in magazine lips. Replace magazine and continue firing. C. If empty case is on face of breech block, clear gun. Change ejector. Replace magazine and continue firing. D. If empty case is in chamber, clear gun. Replace magazine and continue firing.	Gun fires. Gun fires. Gun fires. (1) Gun fires. (2) Gun fires but repeats stoppage.	Defective magazine. Point of bullet misses chamber usually because the first round was out of place in the lips before the magazine was put on the gun. Defective ejector. (1) Defective ammunition. (2) Defective extractor or extractor spring.	Correct maintenance of magazine. Care in stowage during transport and in fitting to stowage pegs in aeroplane. — (1) Nil. (2) Remove magazine. Clear gun. Change breech block. Replace magazine and continue firing.

KEY TO ILLUSTRATIONS

Unless otherwise stated the parts are common to both the No. 1 and No. 2 guns.

Name of part.	Fig. No.	Part No.	Name of part.	Fig. No.
Barrel	1, 3	38	Sear buffer spring sleeve plug with pin.	5, 12
Magazine Mk. I ..	1, 14	39	Buffer spring screw with pin.	5, 12
Body	1, 4	40	Buffer spring	5, 12
Spade grip (No. 1 gun)	1, 4, 6	41	Buffer disc	5
Body extension ..	1, 4, 5	42	Buffer	5, 12
Gas cylinder	1, 9	43	Safety catch, Mk. I (No. 1 gun).	6
Shoulder piece (No. 2 gun).	2, 4, 7	44	Safety catch spring plunger (No. 1 gun).	6
Trigger guard frame (No. 2 gun).	2, 7	45	Safety catch thumb piece (No. 1 gun).	6
Front magazine catch with spring and split pin.	3	46	Safety catch spring plunger guide (No. 1 gun).	6
Rear sight bracket ..	3	47	Safety catch spring (No. 1 gun).	6
Fore sight bracket ..	3	48	Side piece screws (No. 1 gun).	6
Flash eliminator with split pin.	3	49	Spade grip side pieces (No. 1 gun).	6
Gas block	3	50	Trigger bar (rear) (No. 2 gun).	7
Gas plug with split pin..	3	51	Body extension and trigger guard frame securing pin, plunger and spring.	7
Body extension and trigger guard frame securing pins.	4, 7	52	Trigger bar (front), (No. 2 gun).	7
Deflector bag catch bracket.	4	53	Trigger Mk. II with axis pin and split pin (No. 2 gun).	2, 7
Barrel strap	1, 4	54	Safety catch Mk. II (No. 2 gun).	2, 7
Spade grip securing screws (2) (No. 1 gun).	4, 6	55	Trigger guard frame bolt with nut and split pin (No. 2 gun).	2, 7
Shoulder piece securing screws (2) (No. 2 gun).	4, 7	56	Pistol grip (No. 2 gun) ..	7
Locking shoulder	1, 12	57	Front hand grip (No. 2 gun).	7
Deflector bag hinge pin bracket.	4	58	Cocking handle catch with spring.	8
Mounting yoke with bolt, washer nut and split pin (No. 1 gun).	1, 4	59	Cocking handle and cocking handle catch pin.	8
Top and bottom piston stops.	2, 4, 12	60	Cocking handle with spring.	1, 8
Trigger Mk. I with axis pin.	1, 5, 12	61	Cocking handle slide ..	8
Trigger spring sleeve cap	5, 12	62	Cocking handle lug ..	8
Trigger spring	5	63	Cocking handle lug pin with split pin.	8
Trigger spring sleeve ..	5, 12	64	Ejector cover with thumb-piece.	1, 8
Sear spring	5, 12	65	Ejector	8
Sear catch spring	5, 12			
Sear catch with axis pin	5, 12			
Sear with axis pin and guide pin.	5, 12			
Sear lever with axis pin	5, 12			
Trigger rod with pin ..	5			
Trigger rod stop	5, 12			
Sear buffer spring plunger.	5, 12			
Sear buffer spring	5, 12			
Sear buffer spring sleeve	5			

Part No.	Name of part.	Fig. No.	Part No.	Name of part.	Fig. No.
66	Rear magazine catch lever pin with fixing pin.	8	82	Feed-piece plunger with spring.	11
67	Rear magazine catch lever.	4, 8	83	Extractor	10, 11
68	Rear magazine catch with spring.	8	84	Extractor spring ..	10, 11
69	Rear magazine catch spring plug with pin.	8	85	Firing pin screw ..	10, 11
70	Piston rod	9, 12	86	Breech block top view	11
71	Hammer	9	87	Deflector bag frame ..	13
72	Inner return spring ..	9, 12	88	Deflector bag hinge pin	13
73	Outer return spring ..	9, 12	89	Deflector bag catch ..	13
74	Return springs rod ..	9	90	Deflector bag	1, 13
75	Breech block right side view.	2, 10, 12	91	Top plate	14
76	Breech block left side view.	10	92	Separators	14
77	Breech block bottom view.	10	93	Main spring LOADING	14
78	Ejector cam	10	94	Bush with handle LEVER	14
79	Firing pin	11	95	Retaining pin	14
80	Firing pin spring ..	11	96	Bullet support with spring and platform.	14
81	Feed-piece with axis pin	10, 11	97	Magazine body ..	14
			98	Bullet support and guide	14
			99	Lip	14
			100	Cartridge guide ..	14
			101	Front catch plate ..	14
			102	Top plate retaining spring clip.	14

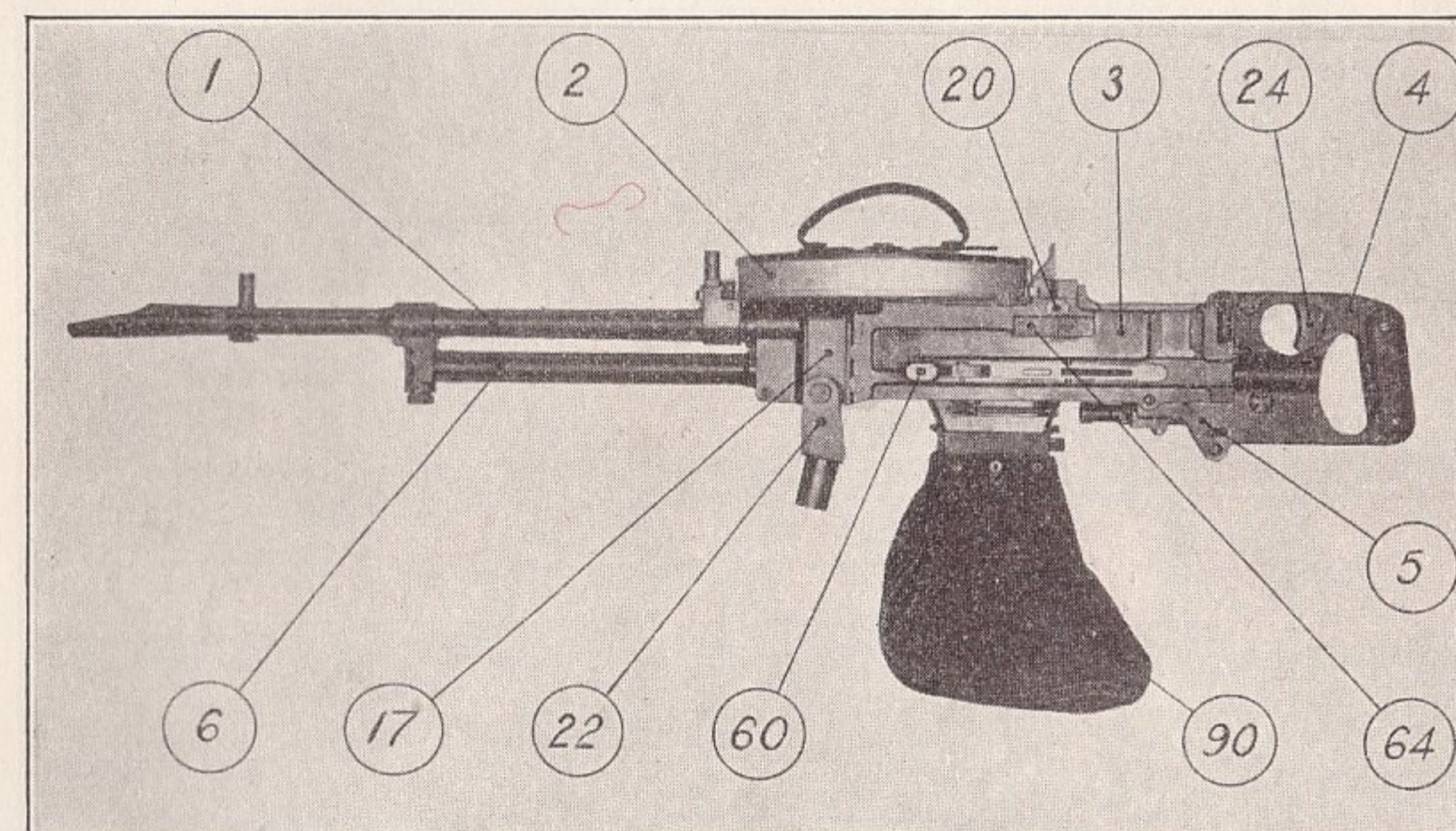


Fig. 1.—Vickers .303 in. gas operated Mk. I, No. 1 gun, left side view.

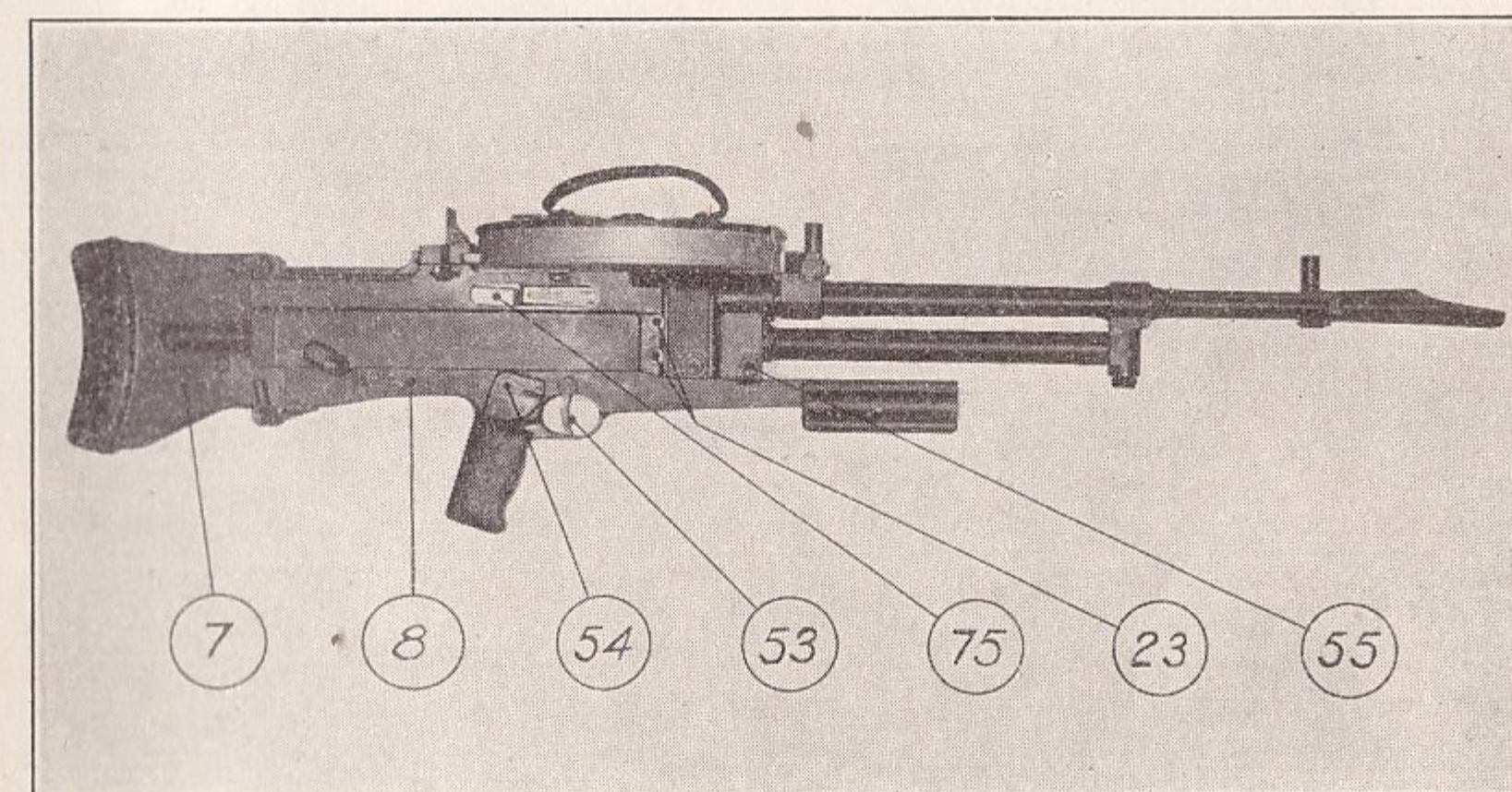


Fig. 2.—Vickers .303 in. gas operated Mk. I, No. 1 gun, right side view.

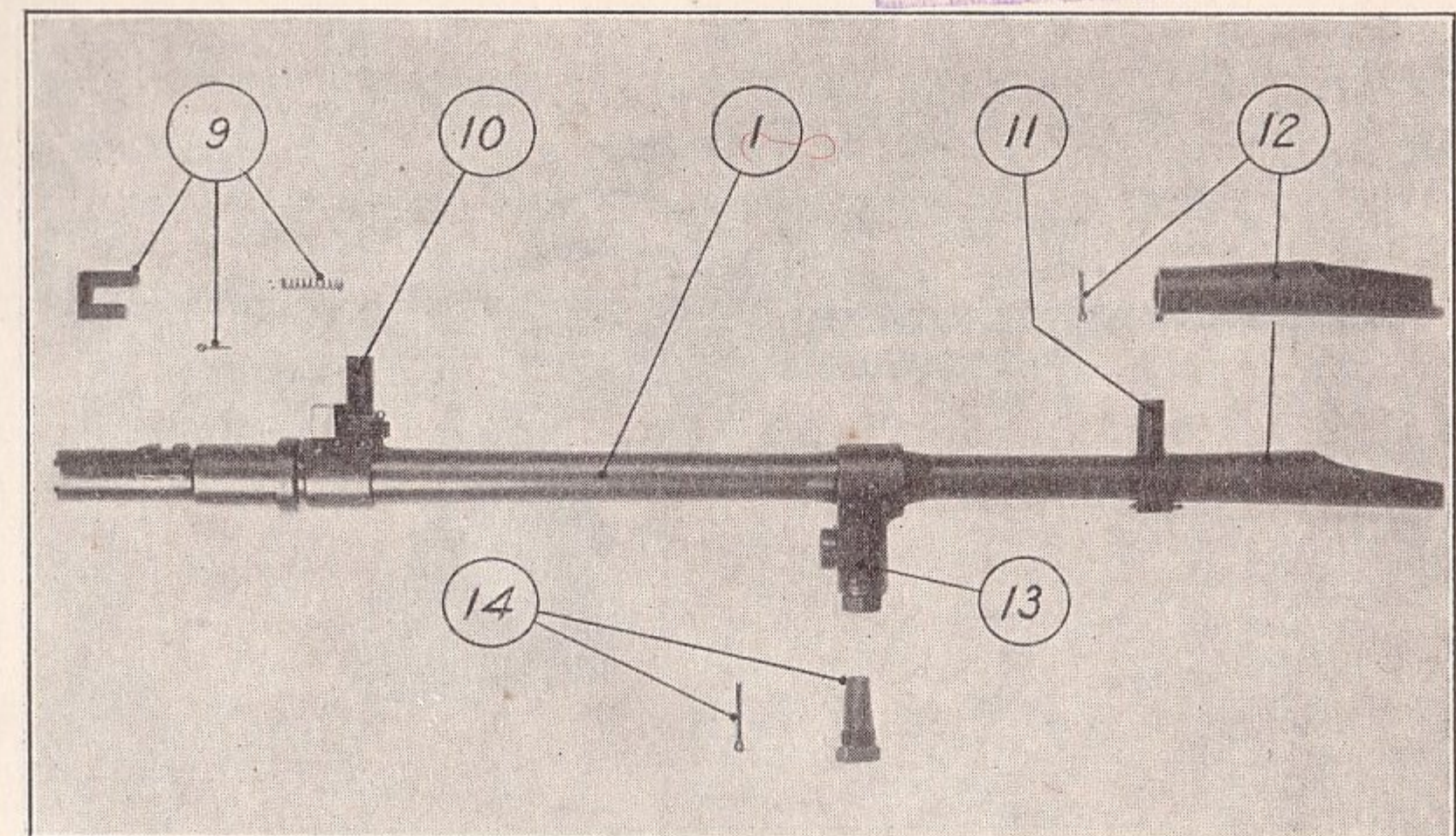


Fig. 3.—Barrel and components.

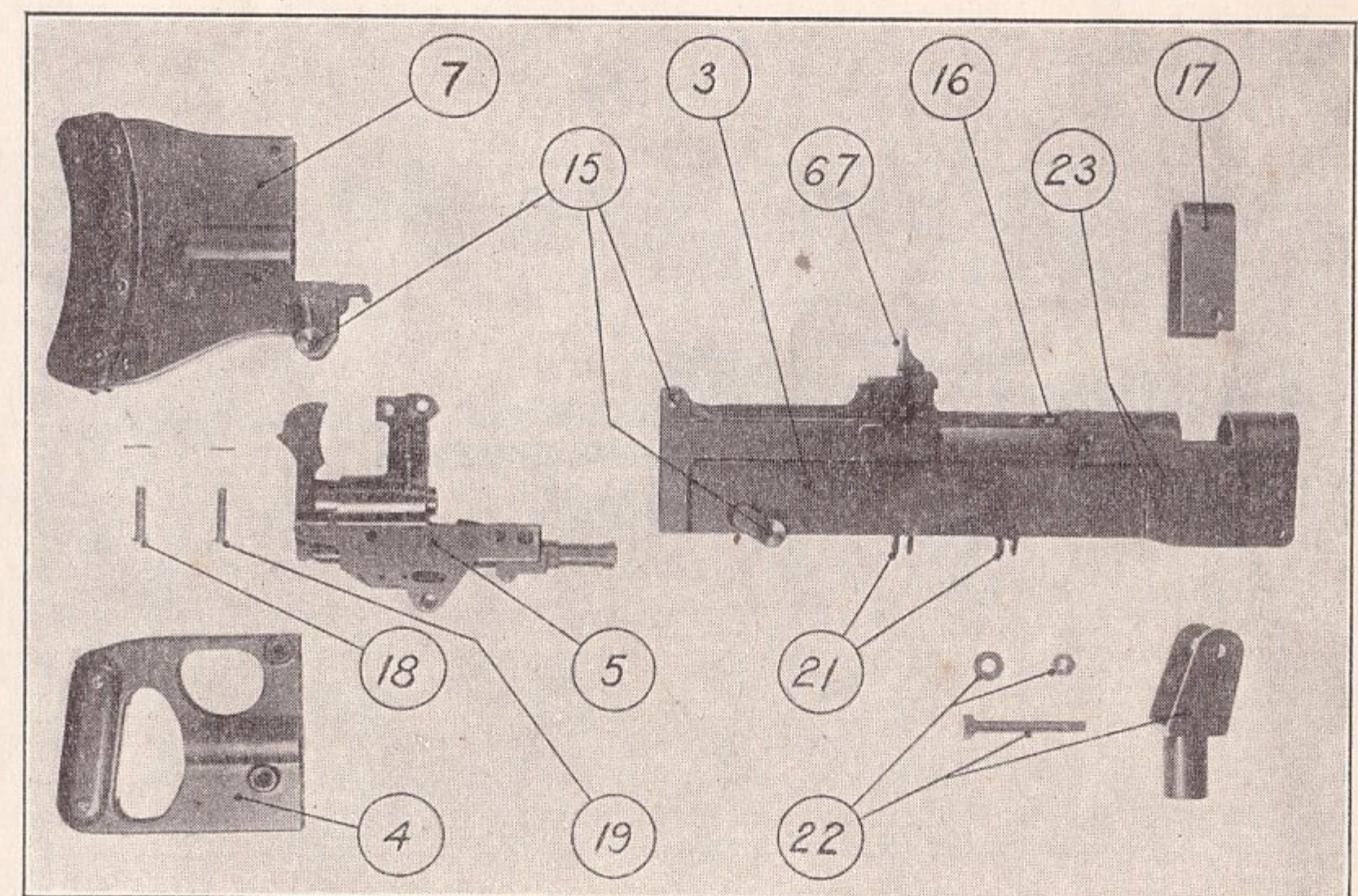


Fig. 4.—Body, body extension and barrel strap. Spade grip and mounting yoke (No. 1 gun). Shoulder piece (No. 2 gun).

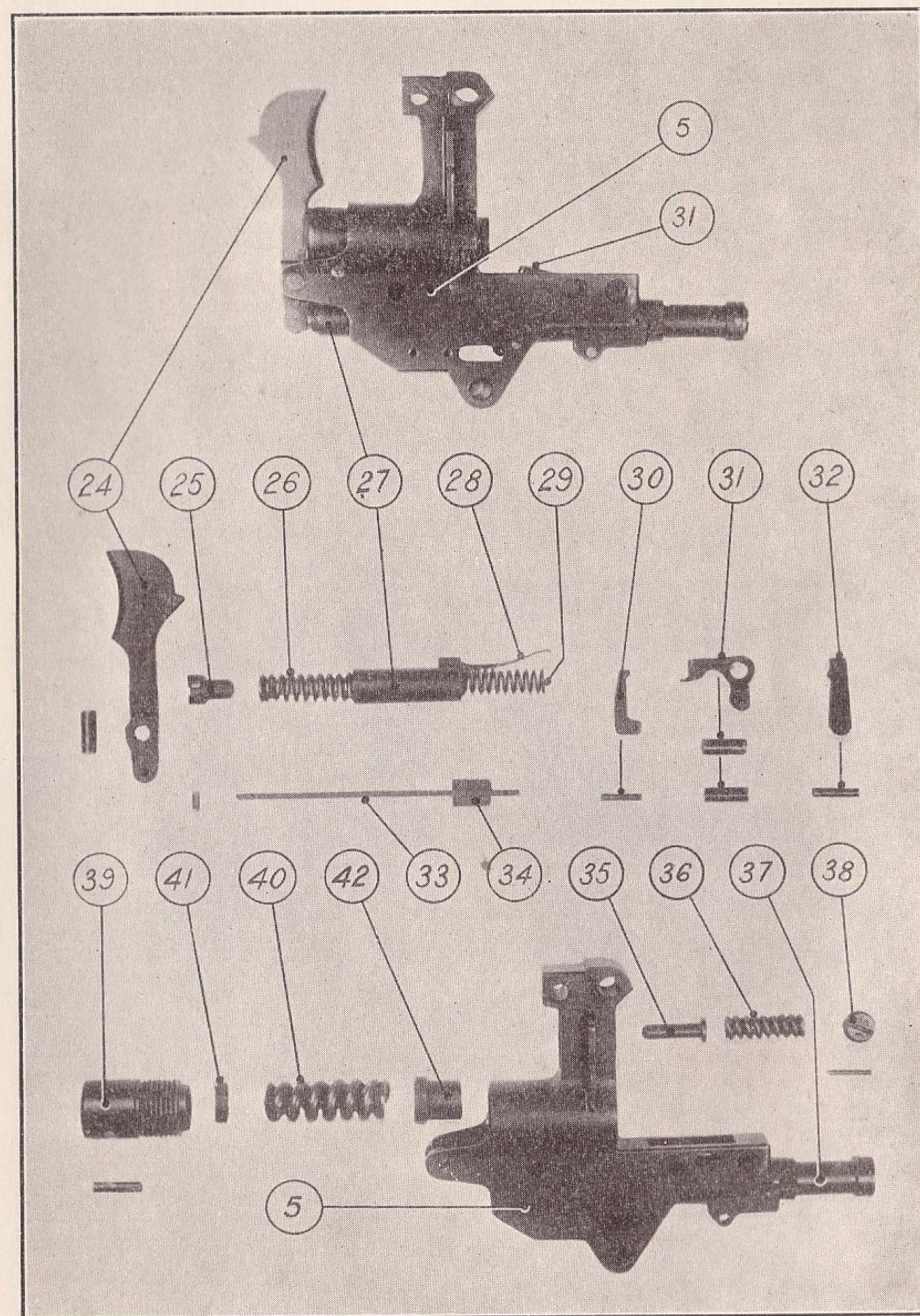


Fig. 5.—Body extension and components.

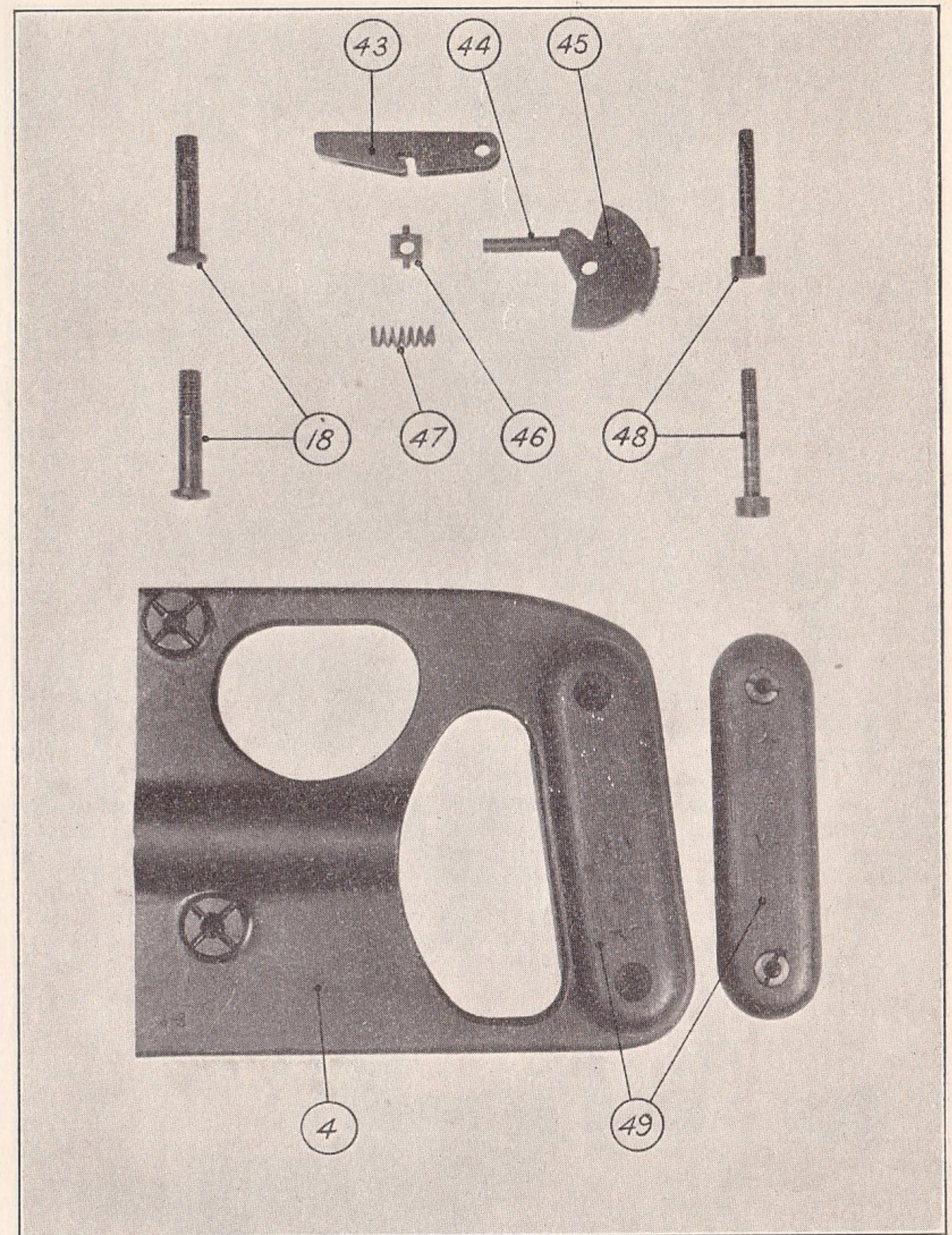


Fig. 6.—Spade grip and components (No. 1 gun).

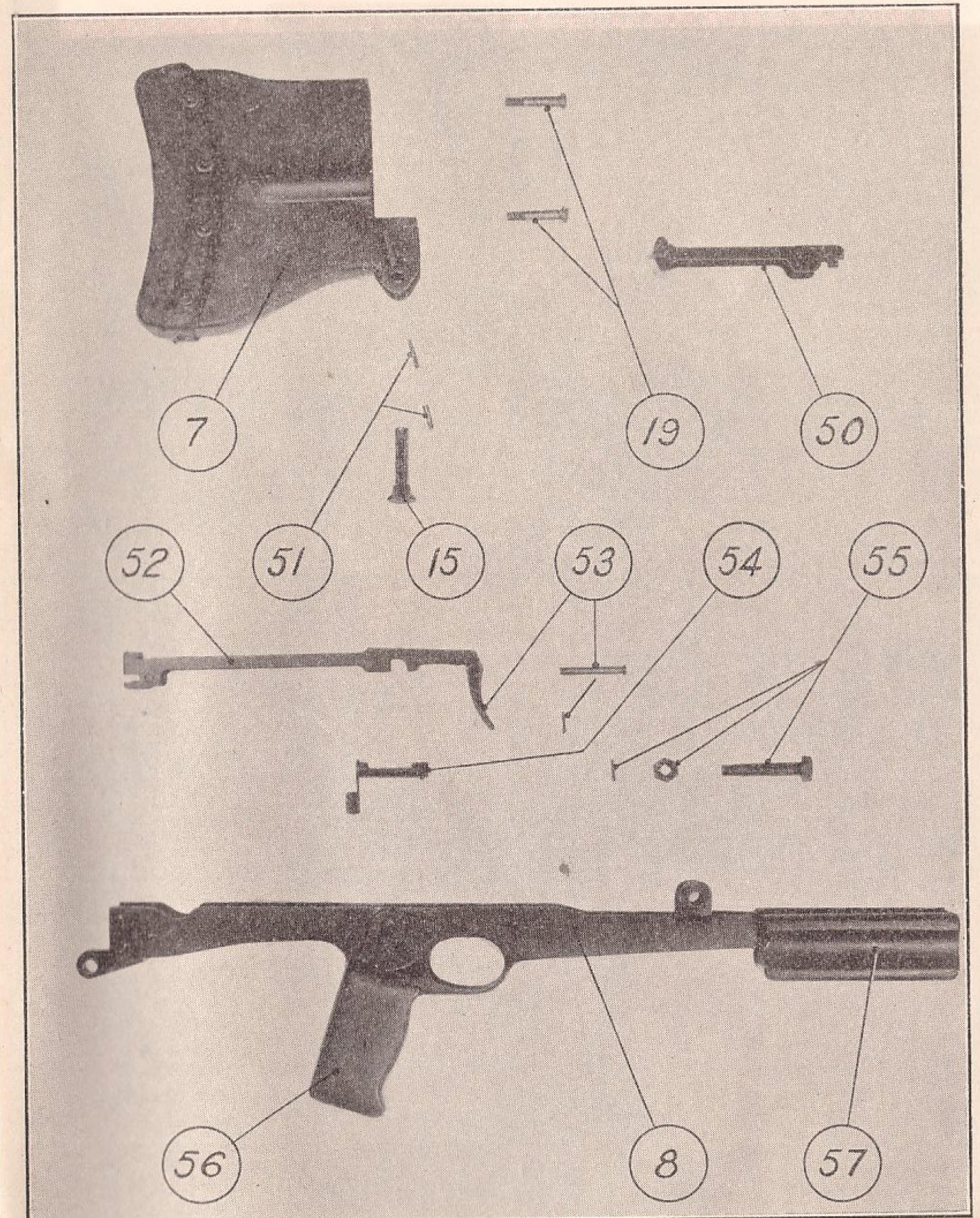


Fig. 7.—Shoulder-piece, trigger guard frame and components (No. 2 gun).

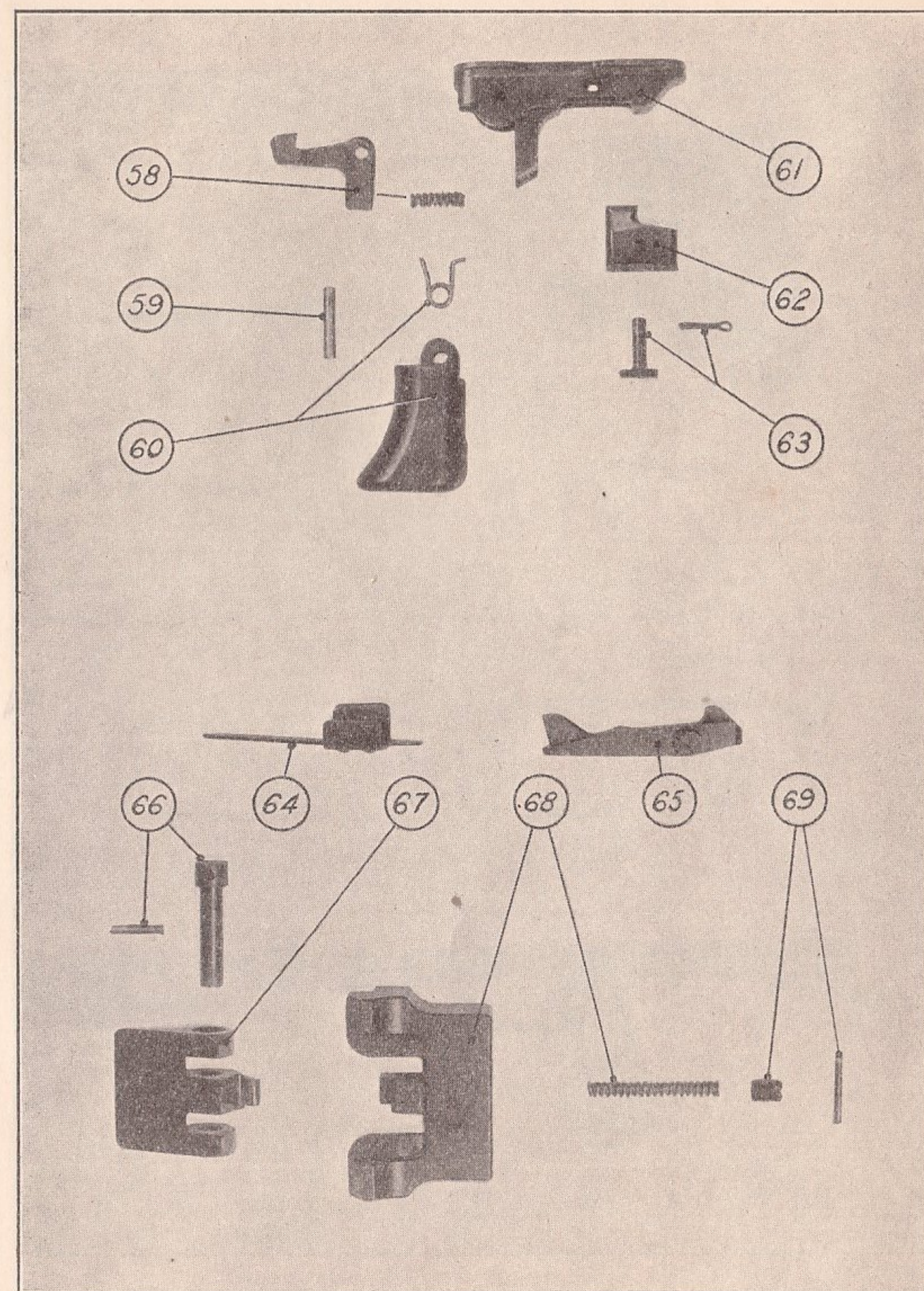


Fig. 8.—Cocking handle components, ejector and rear magazine catch components.

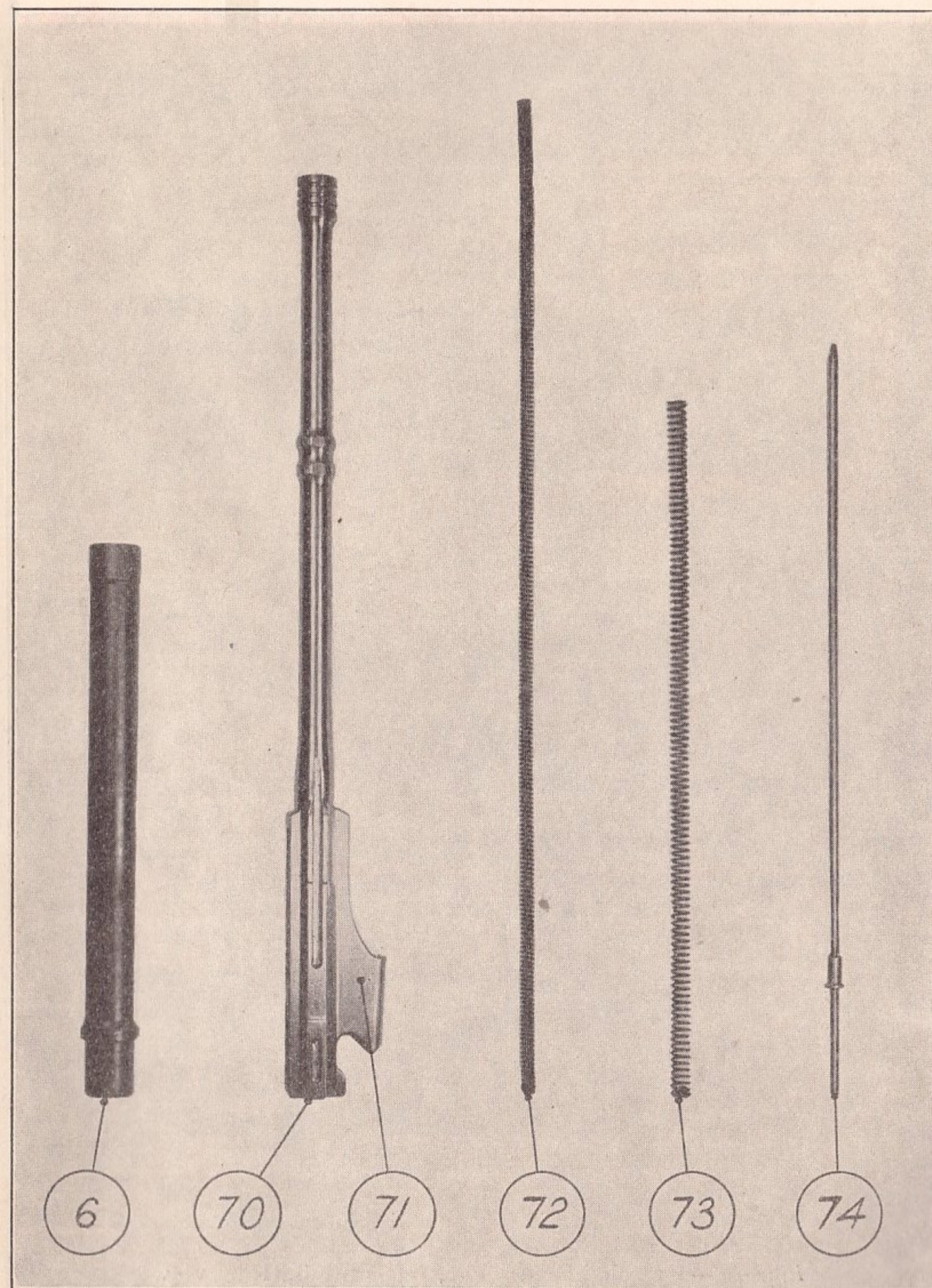


Fig. 9.—Gas cylinder, piston, return springs and return springs rod.

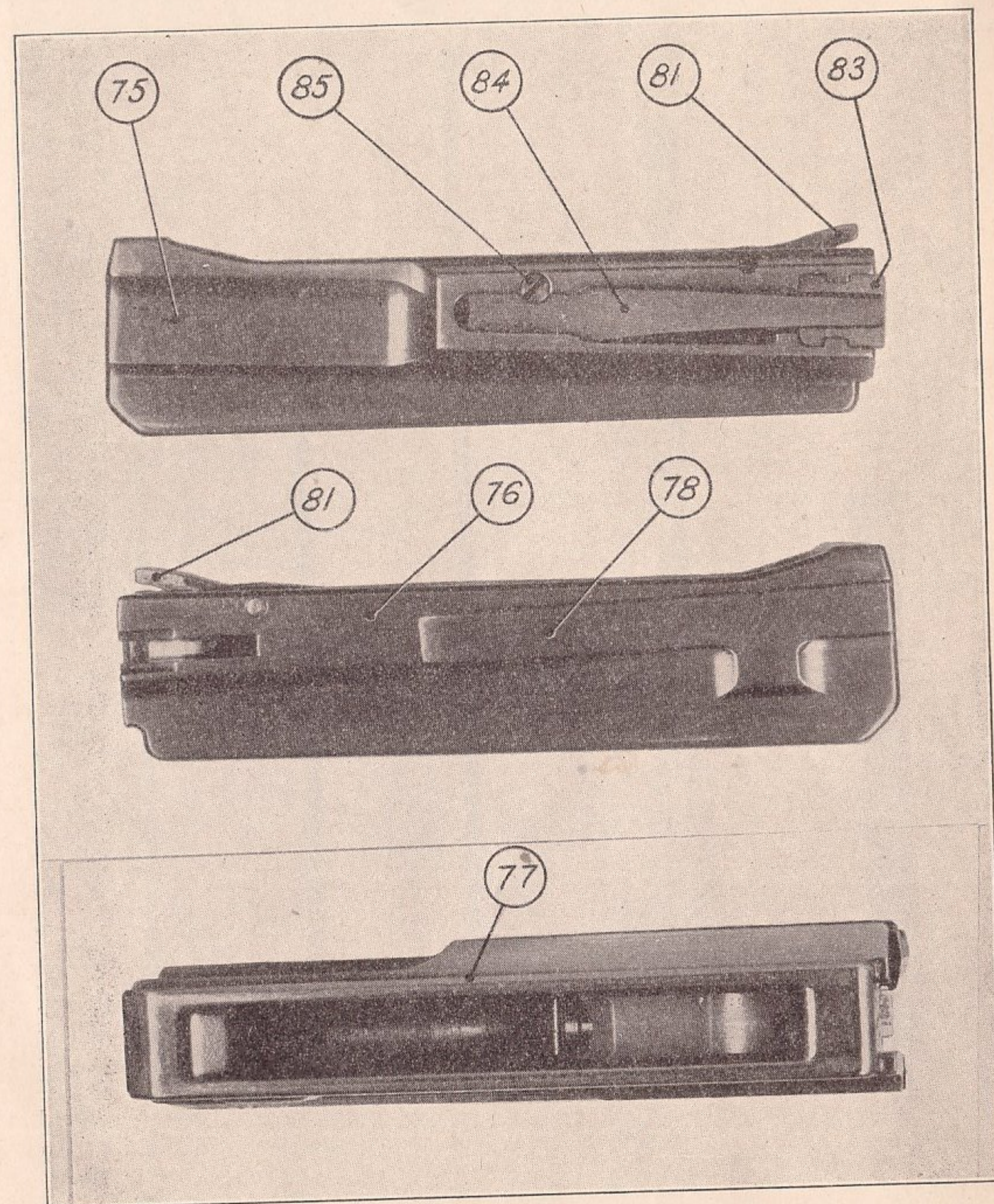


Fig. 10.—Breech block, right, left and bottom views.

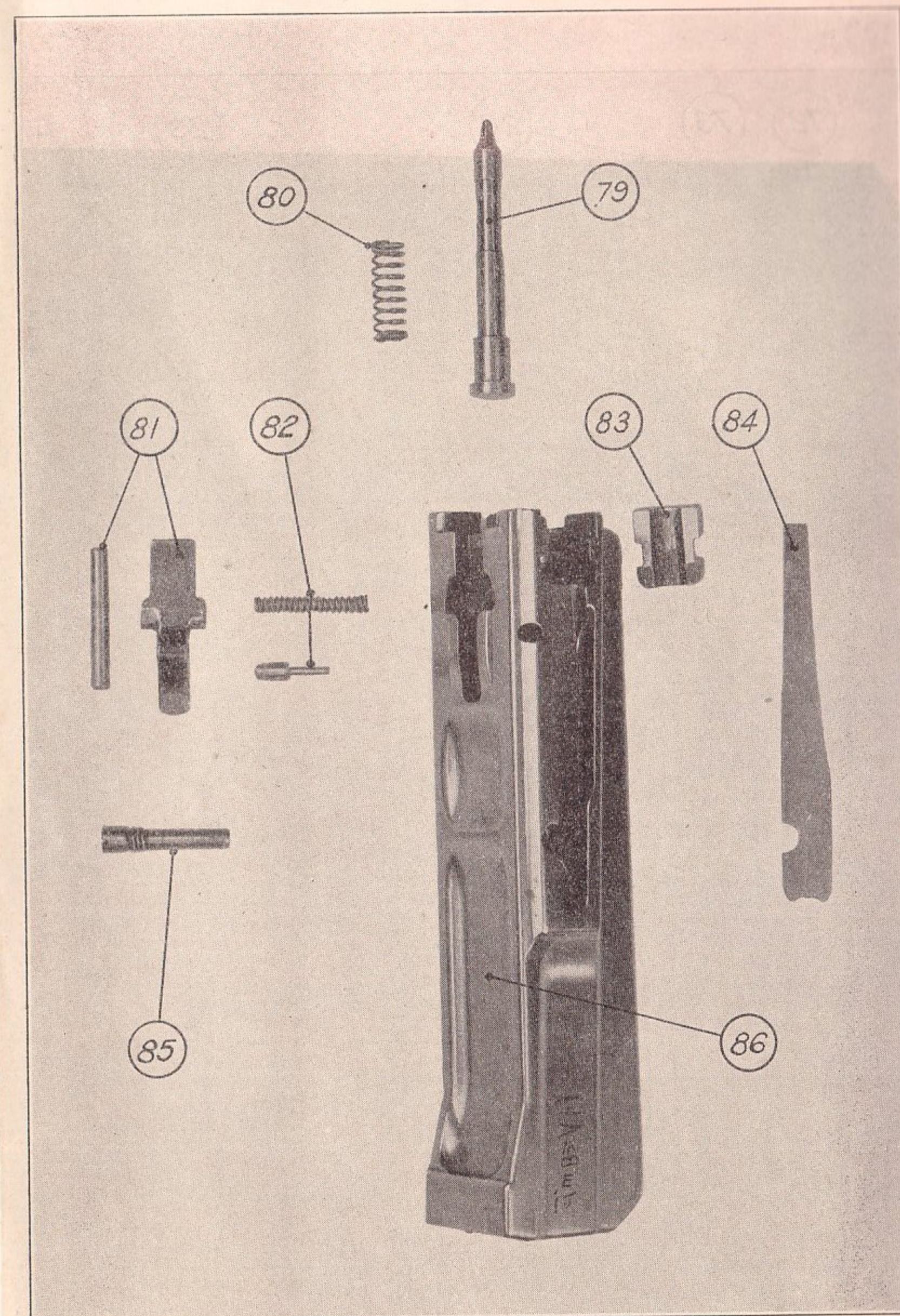


Fig. 11.—Breech block components.

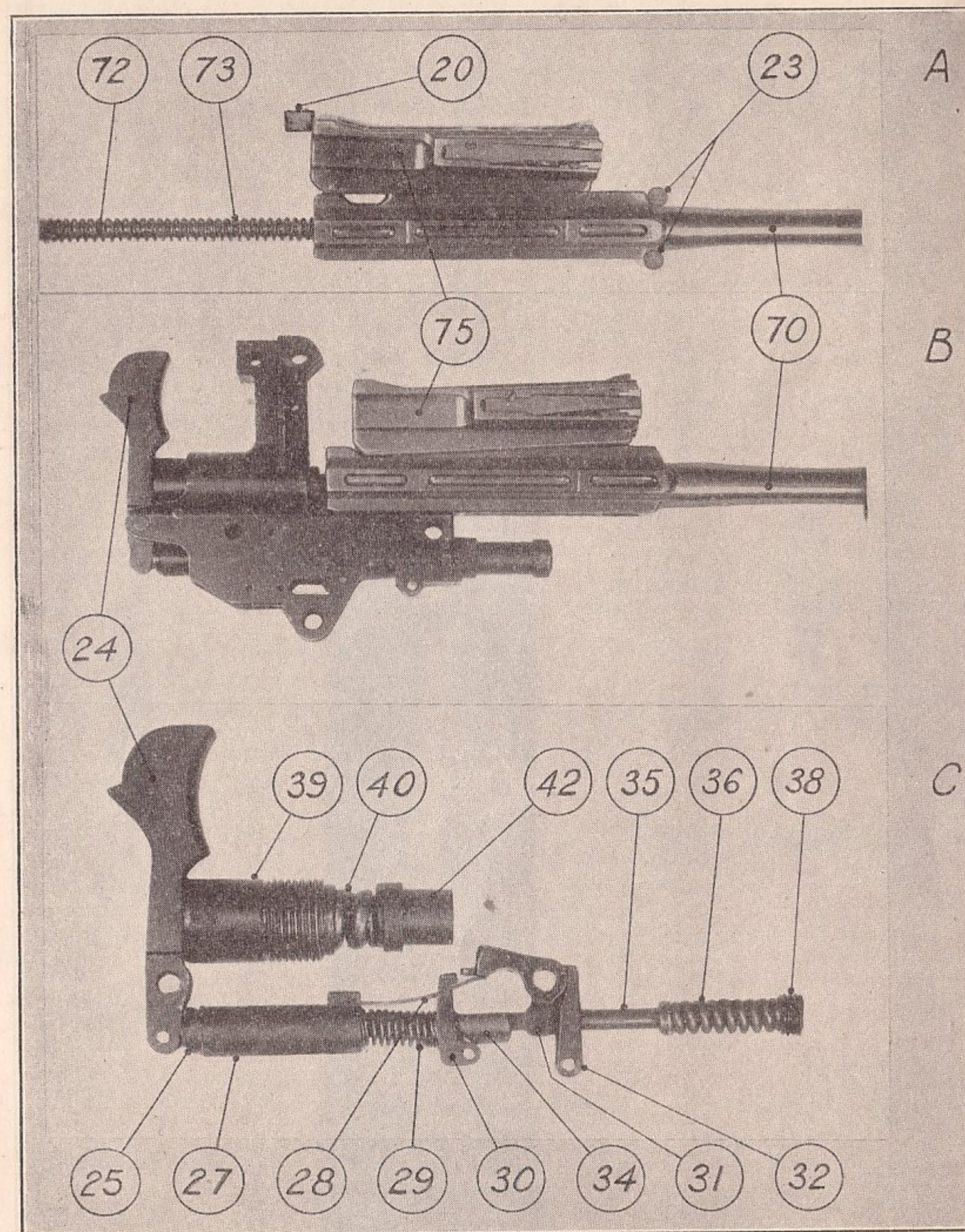


Fig. 12.—Mechanism.
 A. Parts forward.
 B. Parts back.
 C. Trigger mechanism and buffer.

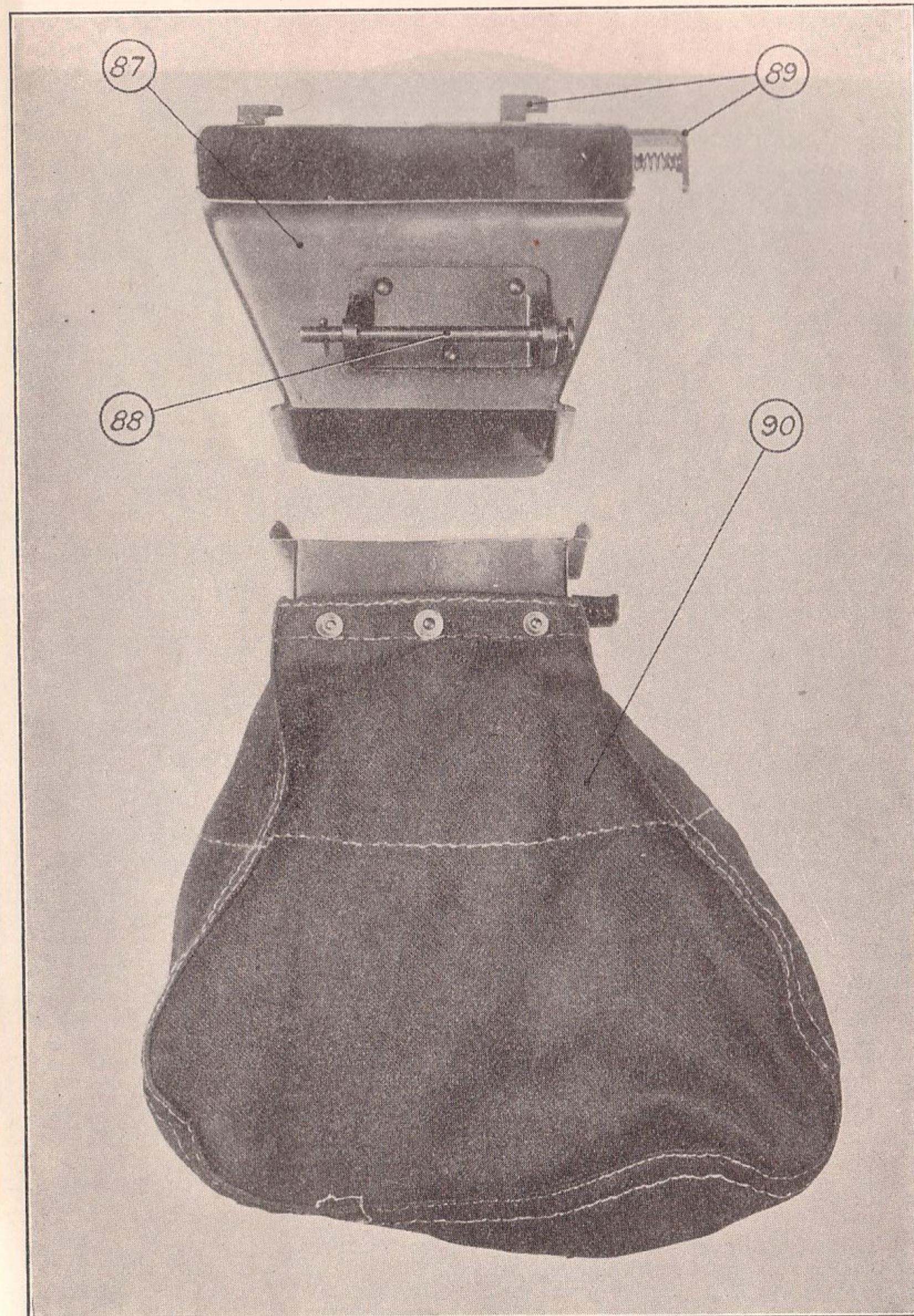


Fig. 13.—Deflector bag.

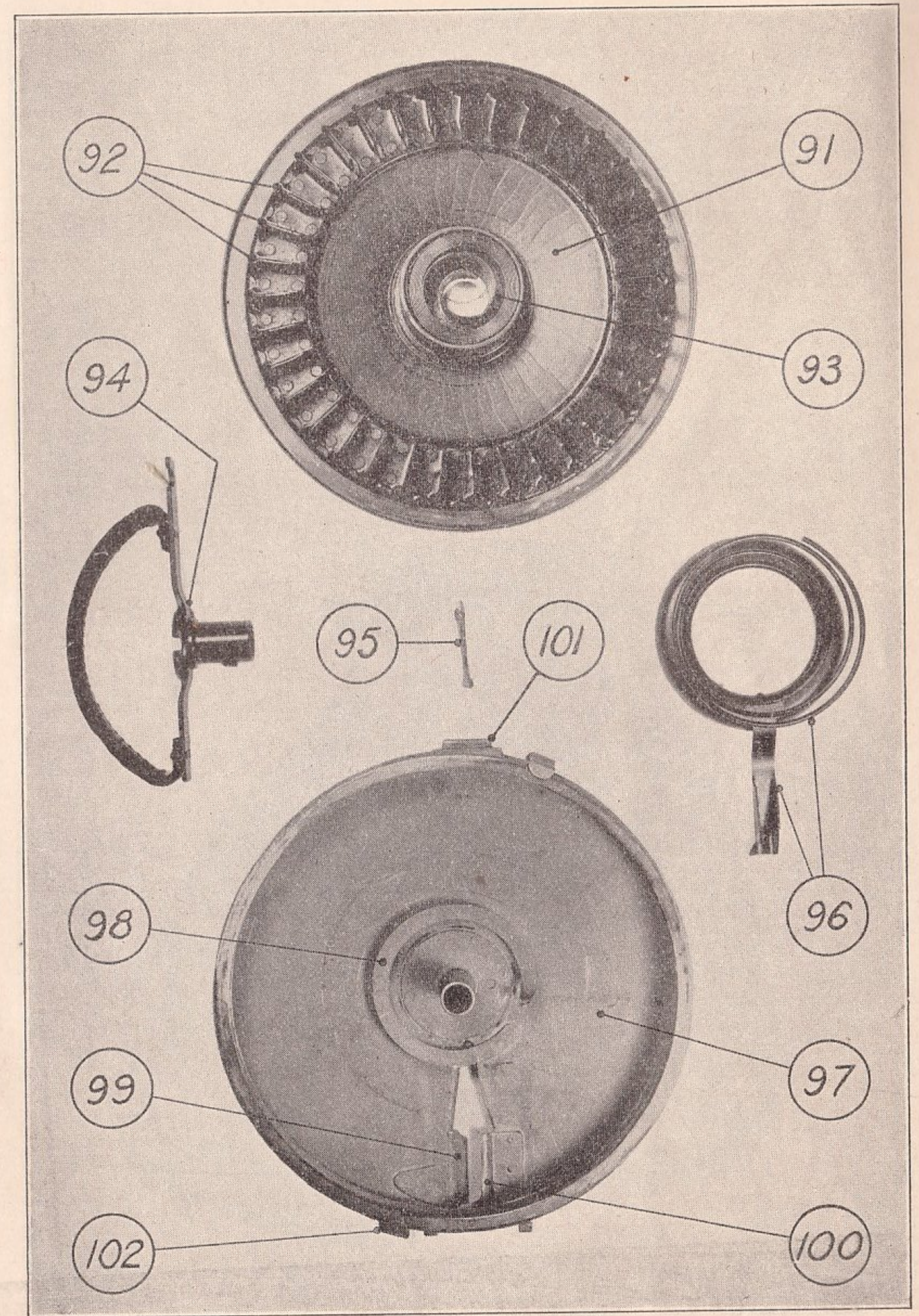


Fig. 14.—Magazine ^{NOI} Mk. I.

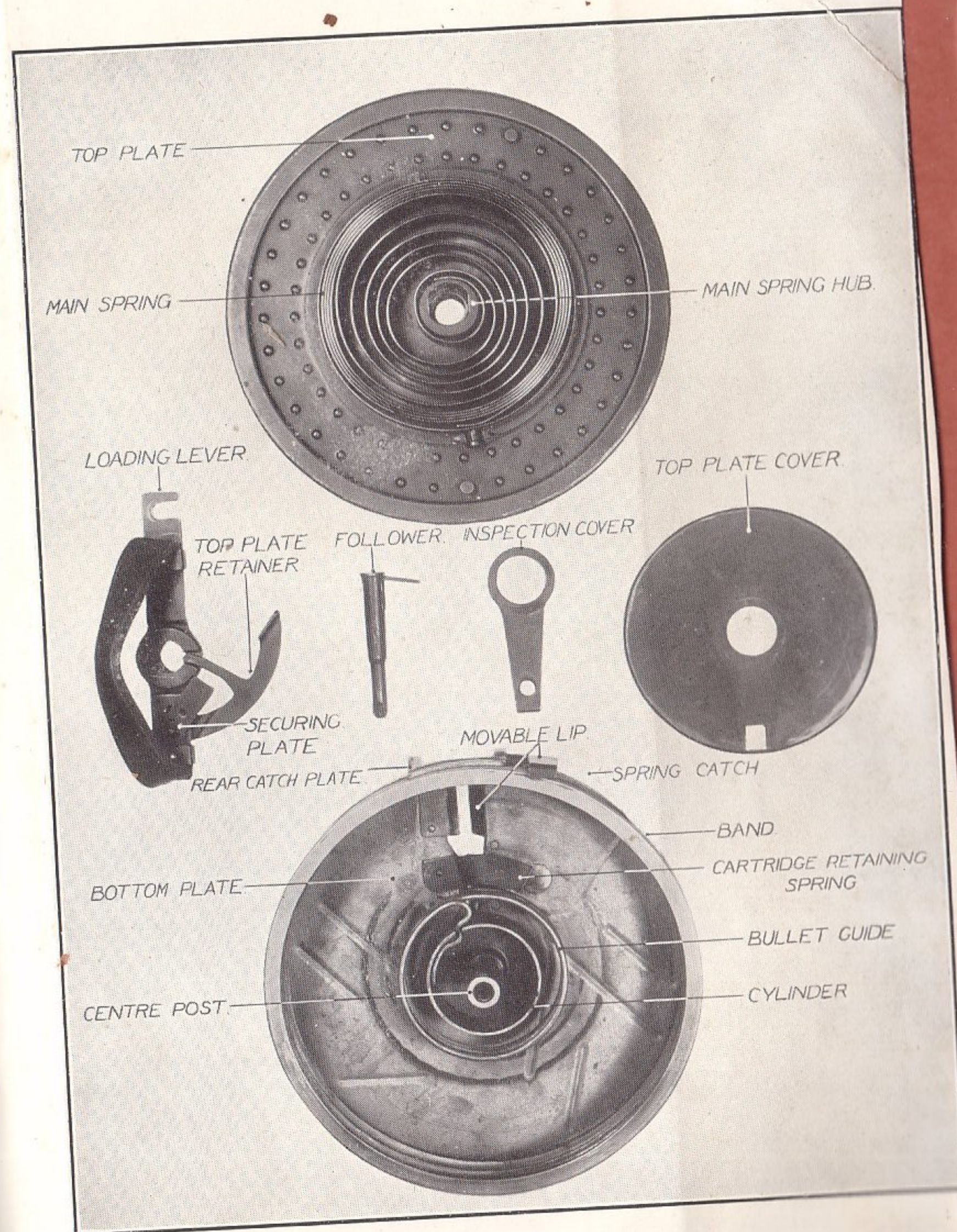


FIG. 15.—Magazine No. 2, Mk. I





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